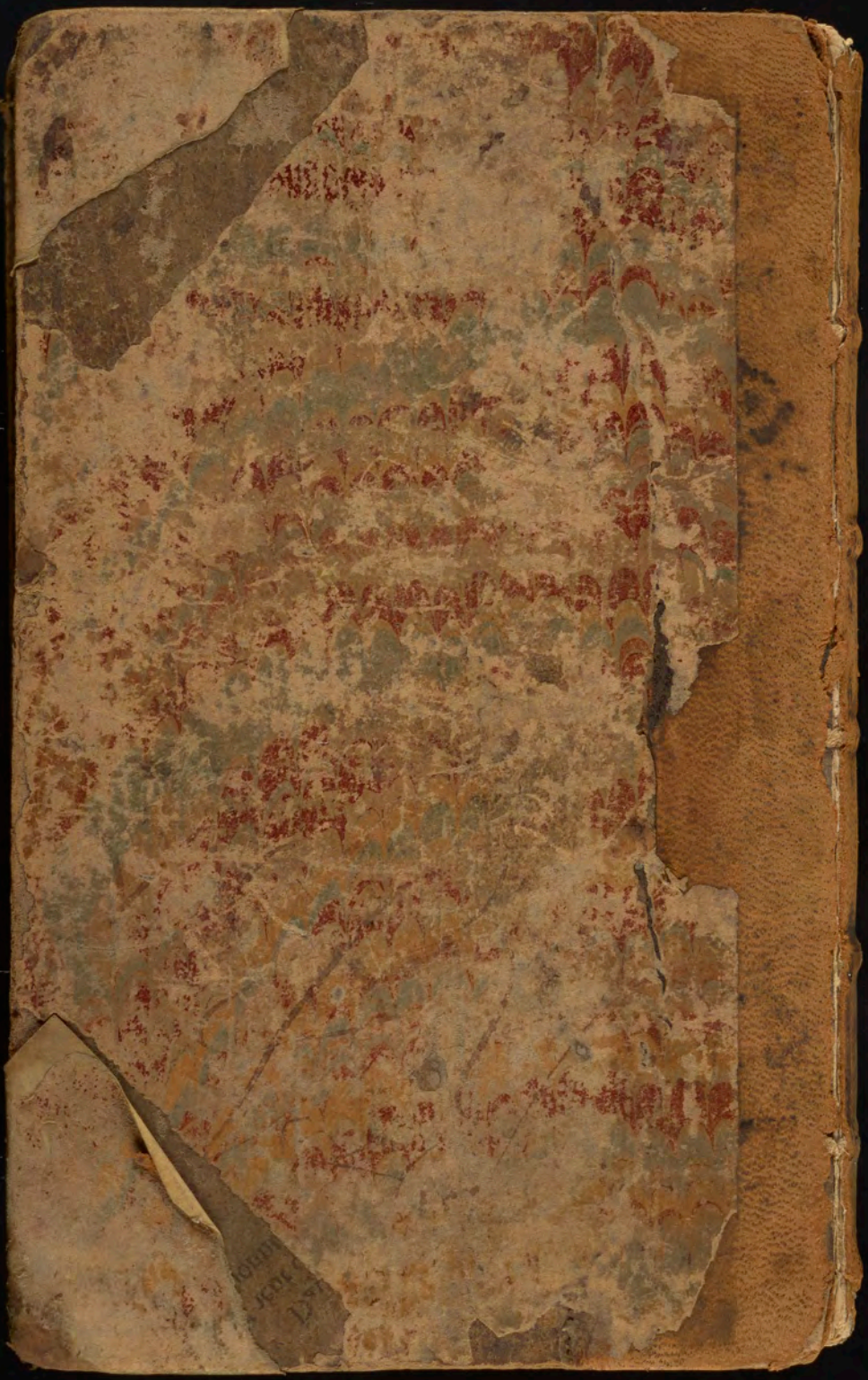

written by

Benjamin Rush

Alone y: we can explain the Pain
w: ~~app~~ is felt sooner & more in y
Head in Lower than in Other parts viz:
from y Blood's rushing more impetuously
into it on y Acc: of its direct situation to y: Heart.
2: upon the Differnat states of y Blood
in the circulating System, so that if
One parts Obstructed. the Blood will run
w: greater velocity in Others.
3: upon a Stimulus applied to particular
parts or relaxing powers applied to
them. this finishes what I had to say
upon the Doctrine of proximate Causes.
the Remote Causes or potentia nocen
ought to come next, but I shall pass
them over here as they will come in better in y:
Methodus Medendi.

we come then to treat of the III part of our Pathology viz: of Symptoms. For a Definition of Symptom recollect w: was said formerly. They have been divided into several Classes, but we shall reduce them all to w: are called "Actiones Læsæ" and these I shall consider on a general plan. I shall in treating upon these Actions follow the ordinary Division of the Functions in 1 Vital 2 Natural & 3: Animal

The Vital are those w are more essentially necessary to Life, & w out w: Life cannot subsist.

The Natural are necessary to y Support of Life but not so much so as y Vital. they

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are employed in supporting the Form & Fabric of the body.

The Animal are those Functions wch Animals have, wch dispose them to act on bodies & to be acted on by them. or in other words they are the Organs of Sense & motion & are common to all Animals as well as man. —

we shall begin wth the last, & 1st we shall treat of the Symptoms of Sense, or of morbid Sensations. the first & chief of these is Pain & Anxiety. these are ye most general & important of any of the Pathol.y we shall begin wth the first. —

Pain. this is a simple sensation &

therefore cannot be defined. those Sensations quas "Malumus non affici" are said to be painful. they may be divided into 1 disagreable 2 uneasy & 3 painful. The disagreable are ye mixt Sensations wch arise from the quality of other bodies such as Colour. Sound &c. or from those Sensations wch we receive from ye four Organs of Sense. Seeing. hearing smelling & Taste. The uneasy & painful are distinguished from ye disagreable by being referred to a Sensation wch exists in our own bodies. The uneasy are more or lys vague & not limited to any one place such as Confusion in the Head. Oppression in ye Breast &

weariness in the Limbs.

The painful Sensations are always restri:
:ted to one part sometimes to a very
small part & seldom occupie a large
Space. Uneasiness arises from a sense
of Difficulty in ye Exercise of our Faculties.
Pain arising from Circumstances wch accompany
Causes wch produce a Difficulty in ye Exercise
of our Functions. This is all we can
say on the Distinction of pain, for a
more precise Meaning of it I must re-
fer you to common Experience.

Let us now enquire into its Causes.
It depends on the Condition of the
part to wch we refer the Sensation wch

depending upon some Actual Cause affecting it.
Dr Gaubius supposes § 674 that there are
imaginary pains. but in this he is mis-
taken. we cannot have the Idea of pain
renewed in our Memories. ~~without the~~
~~the pain ceased~~. the Ideas of which we
acquire by Smell & Taste cannot
be renewed by the Memory. Pain ap-
pears to be an Idea of the same nature
& happy for us it is so, as indeed much of the
Happiness of Life depends on it. we
can renew upon our Memories by cer-
tain Means of Association disagreable sensations
which we formerly felt, but we never can
renew that precise Sensation we felt

(c) The pain felt in an amputated Limb depends upon an Error in Reference, & not upon an Affection of the Limb cut on, or upon any Change induced in the Brain.

in Pain Merely by the Force of Imagination. — If ever the Memory of pain is renewed in Sleep or at any other time it must be only by means of certain Arbitrary Signs. if ever we dream of feeling pain a real pain must attend there as repeated Experience has often taught me

w.th Regard to the Tooth-Ach. 1a,

What is the Condition of the part w.ch pro=duces pain? — Very Impression of a certain Degree of Strength gives pain. the Force of Light sometimes brings on a pain in the Eyes. Intensity of Sound likewise often occasions pain in the Ears. But both these Impressions may be reduced to the

Sense of Touch as the Eyes and Ears are affected w: them in Consequence of the being Organs of Touch as well as Organs of Vision & Hearing.

Pain ~~proceeds from~~ depends on the following Causes. external bodies, or something internal to our Selves. — to this we may add every preg: ure or extension of any ~~non~~ sensient part of the System. Physiologists have spoke only of extensions from their Theory of Pain's depending on a Tendency to a Solution of Continuity, but every Mode of pressure may be considered as the Cause of Pain also.

Pain may likewise depend on sharp bodies tending to cut Nerves in Pieces or upon Corrosive Bodies w: tend to

destroy the Texture of the Nerves.

Heat & Cold in Excess may likewise be considered as Causes of ~~Pain~~ Pain. but how do they operate? by enodering or preparing the Nerves? - I shall not answer this Qst.

- But there are Sensations wch are ambiguous between painful & uneasy Sensations. such as Hunger - Thirst - Pruritus &c of wch we shall say more hereafter.

All the Causes of Pain may be reduced to things wch tend to a Solution of Continuity except pressure & Cold, & these appear to act by urging the Nervous power upon the Sensorium.

Intense pain of all kinds appears to depend on 1 Distention. 2 Acrimony

(or the Growing of a dog.

& 3 Spasm. the 1st take place in the Arterial System, the 2nd in certain Swellings or Sores, &c & the 3rd in the Alimentary Canal. — No Judgement can be formed of the Cause of the internal pain from the Similarity of it w: pain arising from external Causes. the Pain in the Gout resembles a pain ex: cited by some boring Instrument, while it depends upon nothing else but Fluids overdistending nervous Fibres. —— But there are pains from internal & external w: have a greater Relation to each Other, & yet there is not the least Resemblance in y Causes which excite them. this depends upon a Subtility y we cannot explain.

2d: does the Degree of Pain depend on? either upon 1st: the Force of Impression or 2nd upon the Sensibility of the Part affected. Dr Gerdine supposes its Degree is always proportioned to the Danger 4th w: 4th w: it threatens the System. But this is not true for in Cases of great Sensibility in particular parts we have the most exquisite pain 4th w: little or no Danger. The Degree of Pain then will depend chiefly upon the Sensation of the part, how far the Force of Impression may influence the Degree of Pain I shall not enquire here.

we come to speak of Anxiety. all bodies act either externally upon the nervous System. wch proves a fruitful source of Impressions but there may be Impressions without our being able to refer to the place where the Pain is seated or the Cause wch excites it. Pain depends upon Impressions external to the Nervous System. - the "Molesta Sensationes" belong to the last kind of Impressions wch I shall distinguish by the name of Uneasiness instead of Anxiety wch I think includes too much. ~~Pain~~ Pain is attended wth Aversion & an Effort to remove its Cause, whereas Uneasiness is attended

w: but random Efforts to remove it, such as Jactatio, or Restlessness and Inquietude. But there are certain Sensations w: do not rank w: ye painful or uneasy, such as the Appetite of Hunger Thirst &c. Let us now enumerate the various Species of Uneasiness. The chief Example of it is ye Sensation w: arises from the Nervous System universally ~~affected~~ considered. When it is in a proper State Alacrity Gaiety Complacence & Courage succeed, but when it is in a contrary State Moroseness - Sullenness Fear - Hesitation - Trembling - Doubt & Despair always succeed in a higher

or lower Degree. this is general called lower Spirits, & differs you see considerably in Degree. you may easily know the Causes of these Sensations from w: was formerly said on the Laws of ye Nervous System.

1 Species is Interrupt: in Thinking

2nd Uneasiness from difficult Respiration called an Asphaxia on ye Breast.

3: Uneasiness from ye difficult Action of the Heart depending on a weakness of the Heart itself or Resistance to its ready & free Action. It is impossible to distinguish when the One or the Other of these take place. Syncope depends

upon the first. the last Occurs in Cases of Polypi.

4th Species arises from an internal Action of the Stomach, occasioning what is called "Oquitudo". this Species of Uneasiness occurs more frequently than any of the Rest from its Connection w: every part of the System. On wt Condition does Uneasiness depend when it arises from the Stomach? This judgment is involved in Darkness. mere Debility is often attended w: a Sense of Uneasiness. the Anxiety of Hypponcondriacs to be referred to this Source. But it may arise also from a Sense of Resistance to its

action such as a Constriction on ye Pylorus this is ye most fruitful Source of Uneasiness in the Stomach.

The Pylorus from its situation is very liable to these Constrictions. the Consequence of this is a weakness & Inversion of the Peristaltic Motion of ye Stomach & Intestines. by forcing the Stomach it squeezes out the Gastric Juice wch is thrown up & constitutes the Cardialgia Sputatoria. vomiting depends upon a Constriction of the Pylorus especially when it arises from the fulness of the Stomach. how is the Stomach affected in Syncope & in ye Beginning of Fever? Is the Pylorus Constricted here?

shall not answer this Question, but leave it to you. I think the state of ye Pylorus should be more enquired into in seeking for ye Causes of Diseases in the Stomach. But Again Uneasiness in the Stomach will depend upon a Difficulty of the Blood; Transmission thro the Stomach, or upon ye greater or lesser Fulness of its Blood vessels. These are therefore 4 of the principal Species of Uneasiness. There may be Others, but we have not time to point them Out. These 4 occur most frequently more especially in Fevers. all Uneasiness in Sedative wth Regard to ye System It induces a general Debility upon it. If it is not so strong as to destroy

the System it afterwards proves stimulating, & produces an Effort of ye System to relieve itself.

We come now to speak of the System of the Intellectual Faculties.

These are subject to great Interruptions & Irregularities. The first Instance of this is a Want of Sensibility to those Impressions wch are designed to excite Reflex Sensations. In Infants this is called Idiotism or Fatuity. When ye Mind is unable to mark the Relation of Ideas a Loss of Memory is induced wch occurs in Old age. The Causes of these are deeply involved in Obscurity, & I shall therefore

forbear enquiring into them. we shall next consider the Irregularity of our Intellect: Faculties. they are of 3 kinds 1 False Perception 2 False Deductions or Reasonings 3 false or unmeasured Volition.

1 All our Ideas arise from Impression. — when that arises from ~~fa~~ present Impression it is called Sensation. there is a difference between Sensation & the mere Renewal of an Idea. now when Objects are presented to ye mind wch are absent from it we call it false Imagination, or a species of ye irregular Exercise of our Faculties.

2nd: False Reasoning. the Renewal of Ideas depends upon certain Laws in their Appari-

-tion. this Association is ye Faulty of Memory, but it may be in various Conditions. it is naturally founded on the Relation of things. every man forms a Sett of Associations himself, & others too which are common to the rest of Man-kind. Now false Reasoning arises from ye Mind; not properly Marking those Associations or Reasonings wch are observed by every Body around ~~him~~ it.

3rd: False or unmeasured Volition. our Passions ought always to be Deduced from our Reasonings, & Th^ey be adjusted to the Relations of things as commonly perceived. there is ye a standard

wth Regard to our Desires & Aversions, wch differ a little in different Countries but is upon the whole nearly ye same all over the world. an Excess then in either of these constitutes Madness. if a Man is angry at a Person who never offended him he is said to be mad. — or if a Man fears when there is no Occasion for it he is also mad. here then we see unmeasured or false volition. all ye Cases of Madness may be referred to One of these Heads.

Let us now take notice of Madness as joined wth Fever. the word Delirium has been employed to signifie this

kind of madness. There are two kinds of Delirium 1 Depending on the encreased Impetus of the Blood in ye Brain.

2nd: Upon a diminished Excitement or some Resistance in the Action of the Brain.

1st: The Case of Phrenitis belongs to this Head. It is always attended with the Delirium & depends on an encreased Impetus of ye Blood in the brain. But it may occur in the hot Fitt of Fevers. in this Case it likewise depends on encreased Impetus as the full Pulse - inflamed Eyes - throbbing temporal Arteries, &

encreased Sensibility of the Eyes & Ears
ale sufficiently indicate.

2nd: We have undoubted proofs of Delirium
arising from this Second Cause. we
often find it in Continual Fevers when
the vigour of the hot Fits decline, and
attended w: none of those Symptoms we
last mentioned of encreased Impetus.
It is moreover cured by Stimulat: Medi-
cines w: is the Reverse of the former.

Furor is generally employed as a Chara-
cteristick mark of Delirium but it ~~occurrs~~
~~in the first~~ is not always present in
the first nor absent in the last, there-
fore we shall not include it in our defn:
of Delirium.

of Madness without Fever.

we shall call it Insania.

Insania is of two kinds 1st: It is attended with a false Reasoning with Regard to one Subject only. 2nd: When the Incoherence is general with Regard to all Subjects. this kind is generally called Mania the 1st Melancholia, but improperly as it is often attended with a contrary Temper of mind to Despondency viz: with foolish Visionary Hopes. 2nd Mania appears under a variety of Forms which: It is not necessary to distinguish into different Species.

What is the Proximate Cause of

Delirium? this Subject is involved in Obscurity upon ye acc^t of ye abstruse nature of the nervous System. I shall however attempt it. In One Case of Delirium it depends ~~[illegible]~~ upon encreased Impetus, but this does not act solely. violent Exercise often brings on this encreased Impetus & yet no Delirium attends. encreased Impetus alone then will not acc^t for Delirium. a Resistance then to ye Brain's Action must always take place. so that both kinds of Delirium we have spoke off depend more or less upon ye same Cause. — It is difficult to conceive how

these mixed Causes operate, but we have an Analogy to it in ye Operations of Narcotics. they are both Sedative & Stimulating, & it is only When they act in this Manner that Delirium happens. a Person just waking from sleep is in this delirious situation from the sensorium being under ye mixed powers of both the Causes we have assigned. ~~Do~~ When a Man dreams his Brain is in this half excited state. they can only happen in those Cases when some stimulus excites part of the ~~mind~~ Brain, but from another part being unexcited, a Confusion of Thought

× They differ from Delirium in this i.e. y. Brain is in a less excited state than in Delirium or Madness. —

(a) Men whose Imaginations make sudden transitions from One thing to Another & thus become witty are in One of these Situations, the Brain is in a too high excited State. hence the Poet justly said "Great Wit & Madness nearly are allied"

arises. now Dreams & Delirium are exactly analagous to each Other. (1) in Delirium the Brain appears to be in the same state as in Dreams. Delirium and Dreams come on in ye same manner. But further the Dissected Brains of Maniacs show its organic affections wch strongly confirm the Doctrine we have advanced. But an excess of excitement as well as a want of it tends to bring on Mania. hence Maniacs live so long wthout sleep & bear Cold & Sedative Impressions so well. an unequal excitement of ye Sensorium brings on Madness as well as an excess of it. (a) This state of Excitement we said

depend upon an excess of Tension, but this will not account for Madness or Delirium wout Fever. What Other Causes then cooperate to give this unequal Excitement in Madness? the Nerves may be in Fault, as Organs of Sense & motion. the Nerves we formerly said convey the secreted Nutriment, now their different Conditions may depend upon their being more or less moistened w: nutritious Matter. this Conjecture seems to be favoured by our finding the Brains of Maniacs always dryer & harder than is natural. Mr. Meckel at Berlin found the specific Gravity of y Brain

of Maniacs considerably increased.

Fatuity depends upon the Reverse Causes of Madness viz: too great Flaccidity & Humidity of the Brain & Nerves, which unfits them to propagate Oscillations. The Fatuity of Infants evidently depends upon this Cause. Dissections likewise support this Doctrine. Morgagni & other Dissectors have found the Brain of Idiots always preternaturally soft.

(a) This may be subdivided into two kinds 1st when the Sensorium is not affected, & 2 where the Sensori:m is affected w.th Stupor. the first has been called by Authors Convulsion strictly speaking. the 2.nd Epilepsy. the Hysteria may likewise be brot under this second head.

The Moving Powers may be divided into two kinds as 1 consisting in Excess of Motion & 2: in want of Motion. Spasm belongs to the first. This may be divided into two kinds. 1: as Alternating w: Relaxation w: is called Convulsion or Motus Clonicus. 2 Spasm w: does not Alternate w: Relaxation. 1st Contraction subsists in One Mode for a considerable time. This is properly called Spasm or Motus tonicus.

The Causes of Spasm & Convulsion are nearly the same & often mixed. I explain them to you before when treating on Irritability. They may depend

my

1st: upon the Force of Impression. have any stimuli a specific power of inducing Convulsions? I believe not. It would however be of use to consider the very different manner in wch stimuli operate. wn act direct or indirect? wn act from ye force of Impression & wn act from other Circumstances joining wth them.

2nd: upon encreased Sensibility depend: on a Mobility of ye nervous power.

3rd: upon encreased Irritability. Fevers especially those of the Inflammat: kind depend upon this Cause. Dr Gambius very justly ascribes Lientery to it likewise.

4th: upon a Mobility depending upon a want of Tension. this Cause is ye Reverse

of the former, & is induced by a want of Energy in the Sensorium.

5th. Upon those Causes wch disturb ye establish'd Order of our Actions. our System is subject to Habits wch determine ye velocity of all our Motions. any Cause then wch disturbs the Series or Train of our Motions may bring on Convulsion perhaps the first Cause we assigned viz the Force of Impression may act in this way? — we often see Persons who when they first learn to play on ye German Flute seized wth Convulsions in their Fingers from moving them quicker ye Ordinary.

The Defect of Motion may depend on ye following Causes.

1 Various Organic Affections of the Muscles preventing their Contraction. such as over Distention wth Fluids.

2nd: upon ye Affections of ye Moving Fibres alone or upon Atonia.

3^d: upon an Interruption of the Nervous Influx from ye Sensorium into the Muscles. These two last are only properly to be called Paly. the first Case may be call'd simple Atonia as the Muscles & Sensorium are seldom affected in it. —

I shall confine myself only to the last Cause, which may be reduced to two Heads, as depending 1st upon Causes external w.h interrupt the Influx of the nervous power or 2nd upon diminished Excitement.

The 1st viz Compression may depend on extraneous Bodies — Affections of the Brain — Tumors — a Plenitude of the Blood Vessels of the Brain — Fluids effused from Ruptures = Regurgitation in the nervous System — increased Exhalations — Rumors found but &c. — the Plenitude of the vessels induces it most frequently especially when in the nervous System.

This Dissections sufficiently confirm. Apoplexy in all its Degrees arises from this Cause.

2 Diminished Excitement. It is hard to tell when this is in Excess or Defect. we are sure that Cold - Narcotics & some Astringent - Depletion seeall act by inducing a diminish.d Excite-ment or Atonia in the Moving Fibres.

Of ℞ Symptoms of Respiration

We come now to treat of ℞ Symptoms of Respiration, or of those Causes which render it difficult. The Subject is very extensive, & upon that acc: I have chose to give you all the Causes in a Synop:tical or tabular Form.

Inspiratio fit difficilis

I. Ex vitio Aeris
1 nimis rari
2 nimis calidi

II. Ex Angustia viarum per quas Aer intrare debet.
Angina varia Class: VIII G: X Sauvage
Orthopnoea a deglutitis G: IX Sp: 9
——— a Bronchocele 10
——— variolosa 24

III. Ex vitio Thoracis
1 Male Conformata

III ex vitio Thoracis

— Dyspnoea Rachitica G: VII. Sp 10

— Asthma a Gibbo G: VIII Sp: 9

2 Casu

A Luxatione } Dyspnoea traumatica 15
B Fractura
C Ancylosi } Orthopnoea traumatica 14

3 sine Dolore motum negantis

Dyspnoea traumatica

Pleuritis.

Pleurodyne

IV. ex vitio Musculorum Inspirationi fa-
-mmillantium.

Dyspnoea traumatica 15

Orthopnoea traumatica 14

Dyspnoea Scorbutica 22.

Dyspnoea Galenica 17.

Dyspnoea ab Hydrocephalo 23

V. ex vitio Pulmonis

1 Rigidi

V. Vitio Pulmonis

1 Dyspnoea Rachitica 10.

2 Spasmo constricti

A Ab Aere frigido.

B Ab Aere inquinato 1

Asthma Metallicum 12

Orthopnoea a vaporibus 16

C Ab Irritabilitate

2 Asthma Idiopathicum

Asthma Humidum 1

——— Convulsivum 2.

b. Asthma Sympathicum

Asthma Hystericum 3.

Orthopnoea Hysterica

Asthma Hypocondriacum 4

——— Stomachicum 8.

——— Convulsivum Boerh. 19

Orthopnea ab Antipathia 15

Asthma Arthriticum 5

V ex vitio Pulmonis

2 G. C Asthma Exanthematicum 11

——— venereum 14

Orthopnoea febricosa 20

——— a vermibus 17.

3 a Matrice Aeclusi

A Sanguine

Peripneumonia.

Haemoptoe

Asthma plethoricum 15

Orthopnoea peripneumonica 1

— Pseudo-peripneumonica 21.

Asthma a Polypo Cordis 6.

Orthopnoea Cardiaca 2

B. Sero

Dyspnoea pituitosa 1.

Asthma Cachecticum 13.

Inspiratio fit difficilis.

V a vitio Pulmonis

B. Orthopnœa ab Hydropneumonia 12.

C Muco

— Asthma Catarrhale 16.

——— pneumodes 17.

D Aere

Dyspnœa a pneumatica 12

E Pure

Orthopnœa a vomica 7.

Phthisis pulmonalis

F Calculis

Dyspnœa calculosa 3

G Pulvere

— Asthma Pulverulentorum 7

H Tumore

Dyspnœa a Tuberculis 2

— ab Hydatidibus 4

V Ex vitio Pulmonis

H – a Steatomatibus 5

— a vomica. 6

VI Ex Pulmone compresa

1. a Causis intra Thoracem

Dyspnoea a Corde 11.

Orthopnoea ab Aneurismate 8

— a Pinguedine 6

— a Lipomate 18

— a Hydrothorace 5

— ab Empiemate 13

Dyspnoea traumatica 15

2 a Causis in Abdomine existentibus

Dyspnoea a Phiscomia 7. or emr: Buck

— a Gravidita te 8.

— a tympanitica 9

— a Stomacho 13.

— a Liene 14.

VI Ex Pulmone compressa.

2 a Gastrocele 18

Orthropnœa Gastrocele 11

Asthma Hypocondriacum 18.

I Ex Aeris vitio. very few Diseases arise from this Source. I think Dr Cullen has been too diffusive upon this Subject.

II Ex Angustia Viarum per quas Aer intrare debet.

all the diseases marked under this head are rather Symptoms of Diseases than any thing else. they often occur in Cases where little Danger is to be apprehended. Sauvage has considered some of them as Diseases of the Lungs especially the last, but they depend upon nothing else

but a narrowness of the passage thro' wch
air shd pass.

III. As to the Thoracic, wch may be either
1st congenial, or produced shortly after Birth.
2nd may arise from occasional Lesions, or
3 It may arise from pain restraining
the Muscles wch should move the Thorax. to
these we might have added 4th a difficult
Inspiration from Decubitus wch may be
brot on by 3 Causes 1st an Affection of
one side of the Lungs wch prevents their
being properly exercised 2nd from a vomica
or water's being accumulated on one side.
3rd from the Lungs being compressed by water
in the Abdomen, & therefore unable to
dilate themselves in Bed. the Inspiratio
difficilis from my Posture of my Body might

have been bro't in under this Head.

IV. Ex vitio musculorum Inspirationi sammillantium.

This often takes place in ye Lowry from the Muscles being rendered paralytic by increased Circulation of the Blood, or by Pains resembling the Rheumatic, or by the Globus Hystericus wch Several Author take notice of in the Lowry.

The Dyspnoea Galenica happens in Consequence of cutting the Phrenic nerve in ye way of Experiment. But I have seen it occur from Other Causes. the Dyspnoea Apoplectica might have come under this Head as depending in some Measure upon this Cause. —

vel Vitio Thoracis. The chief Cases of difficult Respiration are to be reduced to this Head, as they are ye most general primary Affections of the Lungs.

1. Rigidity of the Lungs. this may include besides those we have mentioned Obstrucations of the Bronchia. Morgani & Bonetus give us several Instances of it.

2 Spasm - This is a frequent Cause of difficult Inspiration. the Cartilages serving Inspiration are liable to Spasm. this Spasm may depend on particular Stimuli applied to ye Muscles serving Inspiration or upon a general Affection of the System which disposes it to these Spasmodic Strictures.

The Asthma Metallicorum is ~~not~~ too general.
2. The Action of Sulphur ~~must be~~ is
reduced to this Head, but it rather be=
longs to those Irritating Substances which
induce Spasm on ye Lungs, or destroy ye
Mobility of the Nervous power. for the
⊕ or ℞ the Mephitic Air w: the ♎ carry
th w: it Act in this way. —

The Asthma Stomachicum deserves our
Notice. Few Asthmas comes on w: out
affections the Stomach first. this Insina=
=tion depends upon a Stricture of ye Pylorus.

Orthopnoea ab Antihathma very improp=
=per. it would be better to say a Pathemata
for we often see Dyspnoea brot
on by Passions of the Mind. all

Irregular motions brot on by Odors or things of ye kind are most apt to show themselves upon the Lungs.

The Asthma Arthriticum is a common Disease, but does not depend on a Metastasis of Morbific Matter, but on ye Equilibrium of ye Nervous System being destroyed.

The Asthma Exanthematicum. the Asthma brot on in Consequence of Ulcers being dried up may be reduced to the Head. It does depend on Morbific Matter stimulating the Lungs, but on ye same Cause as the Asthma Arthriticum.

The Asthma Venereum very seldom

occurs. I know of no Author who has described it. Levauge pretends to have borrowed it from Mercher, but Junker says no more than that if such a Symptom should occur it must be cured w:th Mercurials in ye usual way.

Orthopnoea Febrilis. Everything ye:t urges ye Blood too quickly to ye Lungs brings on Dyspnoea. But it occurs too in the cold Fitt of Fevers from (not a Congestion of Blood in ye Lungs) but a Stricture on ye bafels of the Lungs.

——— a Vermibus. This is evidently Sympt:omatic & requires no Explanation

3:do The Matters w:ch by filling ye Lungs

occasion difficult Inspiration are very various.

Sanguinis. this may act either by being congested in its proper vessels or effused into the Bronchia. the first of these occasions Asthma. all quickened Inspiration may be called difficult Inspiration, & generally arises from an excessive Quantity of Blood in the Lungs. the difficulty of Breathing in Fevers depends on this Cause from Blood being poured too plentifully into the Lungs. — the Inflamat: & Hemorrhagic Diathesis gives a particular Determination of Blood to the Lungs.

The Asthma Plethoricum attends generally all plethoric Persons.

The Orthopnoea Peripneumonica. is nothing else but an improper species of ye Catarrhus suffocativus.

The Orthopnoea Pseudoperipneumonica is ye Peripneumonia notha of Sydenham & Boerhaave. It is nothing but a Catarrh or a Congestion of Blood wch is greater than ye Stimulus wch induces it.

Dyspnoea a Calculis depend generally upon Calcarious Earth, at least all ye Stones I have examined are of this kind.

the Dyspnœa a Pulvere. is a real Dis:
-ease: the Flax Dressers are most subject to
it. It is somewhat surprising y: Millers
are not subject to it. perhaps it may
be owing to y Flower being less offensive
to the Lungs. The Millers Cough
proverbial - owing to Cold
Burdens &c - Hair Dressers
who live among Flour
not subject to it.

Symptoms of the Heart's action.

The Consideration of the Pulse naturally comprehends every thing relative to the Heart's Action.

I shall consider the Frequency of the Pulse, & confine myself to those which are most commonly marked. But here we must premise that ye same Causes always excite both ventricles of ye Heart at once, & y^t the Action of ye Heart depends upon its Irritability. This Irritability may be considered as a vis Insita or as depending upon the Sensorium. I do not suppose the first can be independant of the last as Dr Haller has done, but shall assume it at present meaning by it those Causes which act on ye Heart

itself, directly or upon the Sensorium first & indirectly upon the Heart.

The Causes acting upon ye Heart directly are 1: an Influx of venous Blood.

2 more or lesse Evacuation of ye ven: Blood.

3 The different States of Irritability.

4 Unusual Stimuli applied directly to the Heart itself.

The Causes acting on ye Sensorium may be reduced to ye following

1 Direct & 2 Indirect Stimuli.

1: we shall consider the Causes wch act directly on ye Heart

1: What ever encreases the Influx of the venous Blood beyond wt is ordinary

will encrease the Pulse. Muscular Motion will produce this Effect, as also a frequent Respiration wch is ye most com: mon Cause of a quick Pulse. If the size of ye sanguifer: System is ~~not~~ over propor: tioned to ye Heart's magnitude a quick Pulse will be produced. this is ye Case w Infants hence ye Frequency of ye Pulse.

2 Imperfect Evacuation of ye Heart's ventricles will produce a Frequency of Pulse, as ye Heart's Contraction always continues the same. this Imperfect Evacuation arises from 2 Causes 1 a weakness of ye ventricles of ye Heart. this occasion

in all Cases of great Debility as in Deliqui:
:um Animi, or in dying Persons. hence
we always find a frequent pulse just
before Death, unless from some Cause
ye Sensibility of the Heart has been
destroyed. or it may arise 2^ndly from
a Resistance in the Blood: vessels de:
:pending on Aneurism Polypus Obsti:
:cations & Spasmodic affections of the
whole Arterial System. the Pulmon^y:
Artery is affected by every thing wch renders
Respiration quick or difficult, so that y^e
Blood's Course is more apt to be quickened
in the Lungs than in y^e ~~lob~~ Aortic
System.

3 Increased Irritability may

increase the Heart's Actions. This will depend 1st upon increased Sensibility in the whole System. hence ye Frequency of Pulse in Infants & Females.

2 upon general Atonia & Debility which gives Mobility & Irritability

4th Unusual Stimuli of ye direct kind have been supposed to increase the Heart's Action. Physiologists have called in ~~Blood~~, Heat, or a Specific Animal in the Blood as direct Stimuli to the Heart. but this is wrong Foundation from ye Heart's Insensibility to them both, & from ye power of Habit rendering them ineffectual. what are ye unusual Stimuli which act on ye Heart? These are fewer than have been supposed,

as appears from Dr. Smith's Experiments. — we are often sure of an Acrimony circulating in the Blood, & yet no quickness of Pulse attends it, as in Cases of Scrofula, Scurvy, Jaundice &c. Mercury, Antimony & Arsenic are powerful stimulants, & yet when received in the Blood never affect the Heart directly. if they ever do affect it, it is indirectly by stimulat: the Stomach or some of the Excretories. What has been said here applies still more to the Arteries. if there ~~are any direct~~ stimuli it must be the Sedative Impressions but can these act on the Sensorium first & indirectly

on ye Heart.

Let us now consider the Causes which act on ye Heart by ye Intervention of the Sensorium. these are Stimuli of a direct or indirect nature. the 1st are originally stimulating; the last are at first Sedative but prove stimulating afterwards. the 1st of these prove ye most frequent Cause of ye Quickness of ye Pulse such as Fewer &c.

What does Irregularity of ye Pulse depend on? on Pulsations not succeeding each Other at proper Intervals? this is called Palpitation of Heart. It requires no Answer from w^t has been said. See Dr Gambius § 777.

Having considered the velocity of ye Pulse let us now attend to ~~[illegible]~~ its Hardness Softness Fulness &c

It is very difficult to tell precisely when each of these take place. Some have supposed a Distinction between a quick & a frequent pulse, but I have never been able to perceive it so accurately as to speak of it w^th: Certainty. I always judge of ye Frequency of a Pulse by its Suddenness. the Blood has a lateral progressive Motion. now in ye sudden pulse we feel ye lateral stroke only w^ch: is known by its being

pointed & accumulated. It is common
ly distinguished by Surgeons by ye name
of a Jerk in the Pulse, & is generally
opposed to undose: is called ye undose Pulse
in wch ye progressive motion is evidently
perceived. You must consult your
own Experience for a more accurate
knowl of these Distinctions.

The full & strong Pulse are often
united. the full Pulse depends not on
more Blood evacuated from ye Heart
but upon Resistances in ye Course of the
Blood. this is evident from ye full
Pulse wch follows Ligatures. this
lays a Foundation for a Distinction

between a full & strong Pulse. the full pulse is generally slow & soft. the strong for the most part hard & quick, & gives a sense of Tension to ye Physicians Hand. a strong hard pulse is always a favourable Symptom in Fevers but it is still more favourable if it is full only wth out any great Strength. a full ~~pulse~~ Pulse does not always indicate a great Quantity of the Blood in a Patient as the Fulness of the Pulse is greatly influenced by the Size, situation &c of the Artery ~~of~~ at the wrist. the full Pulse in Inflam^n: Tumor likewise depends only upon a Resistance & not upon an Increase of the Quantity of ye Blood or

of the Heart's Force.

The Hardness & Softness of ye pulse depends upon ye Muscular Fibres of ye Arteries themselves. the first is owing to an Excess of Tension in ye Arteries. the last to a want of it. It is the greatest Desideratum in Medicine to know when ye Pulse is hard & soft & wh: are all the intermedi: te Degrees between a hard & soft Pulse. I conclude then that a 10,000 Circumstances vary the Pulse, & that nothing is more difficult than to form a regular Judgment of Diseases from it. I

think the different states of Equality & Inequality of the Pulse w.d indicate the state of the System much better than the Frequency of the Pulse. here I must add that I have never Observed the nice states of the Pulse Solano takes notice off, or if I have by Accident discovered any of them I have never Observed the critical Discharges follow them that Solano talks off. perhaps this may be entirely owing to our Northern Climate in w.ch Fevers & Other Diseases Observe less regular periods than they do in warm Climates.

altho' I said before ye 2^d Consideration of remote causes would come under ye Methodus medendi, yet I think it will be of use to treat of a few of them in this place. The subject is very extensive — but I shall confine myself only to Air & Diet.

1st: we shall treat of ye Sensible Qualities of the Air.

2nd: we shall treat of ye properties of ye Air by wch I mean its Density Elasticity &c.

3rd: we shall take notice of ye Air as impregnated wth foreign Bodies.

1: Heat & Cold are very extensive in

their Operation, and act differently in dif-
ferent times even in the same Degrees.
their Action is diversified 1st: by their Degree of
Intensity as expressed by y^d Thermometer in
as far as the Body is considered as
inanimate, or as a common Mat. these
are 2d: are called y^d Absolute Effects of
Heat & Cold. but 2nd: they both operate
differently on an Animal Body viz
Relatively. i.e. their Effects are pro-
portioned to y^d generating power of Heat
in the System. 2d: Degree of Heat gives
the Body its uniform natural Tempera-
ment, or neither encreases or lessens it? —
62° in this Climate. the Body always

remains at 98°: in this Temperature. any thing beyond this encreases ye Heat of ye Body. any thing below 62°: lessens the Heat of the Body. this may be very different in warm Climates. but we have no Experiments to determine this.

3rd: The Effects of Heat & Cold are diversified as acting on Sentient Bodies, & hence the Perception of them both are diversified by the States of the Sentient Extremities.

4th: But all we have said concerning ye Effects of Cold will be diversified by their acting differently on the Solids or Fluids.

5th: They will all be diversified by ye power of the System to resist or receive their

(a) Heat beyond the ordinary Heat of the Body acts as a stimulating Inflaming Impression, bringing on Blisters &c. if it should ever arrive at 150: the Serum w: be in Danger of being coagulated. —

respective Effects. —

we shall now speak in particular of the Effects of Heat &

1st: we shall speak of its Absolute Effects upon the body. I formerly suppose there was a subtile Fluid in ye Nerves wch was under the Influence of Heat & Cold. this Fluid is a portion of inanimate Matter Heat therefore acts upon it & gives it greater Elasticity & Rarity wch induces Mobility in general or Sensibility & Irritability as far as it depends on Sensibility. (a)

2nd Absolute Heat gives ye ansiun to ye Simple

Solids, which induces Laxity - a want of Tension, & in Consequence of these Mobility & Irritability.

3rd: Absolute Heat operates on our Fluids as a Mist & expands them to a greater Degree, & hence induces an Lump in Fluidity, which disposes them more readily to expand the Solids.

4th: Absolute Heat acts upon our Fluids as Mists capable of intestine Motion. i.e hastens their Putrefaction, or the Evolution of a saline Matter which likewise still further increases the Fluidity of our Blood.

5th: Absolute Heat proves a Stimulus

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to ye nervous System, & by this means accelerate the Circulation of ye Fluids, which shows its Effects on ye Surface of the Body, upon ye Acc^n: of ye Heats being applied Originally there, as well as upon ye Acc^n: of ye natural Tendency of the Blood in its Circu:lation to the Skin.

6th: Absolute Heat as evolving a Saline Matter encreases its natural Acrimony w^ch: Acrimony acts more in proportion to its being concentrated. Heat dissipates ye more fluid parts of the Blood & thus encreases its Concentration. This Acc^n: for ye Acrimony of ye Bile. [illegible] the Liver

so much encreased in Summer time.

7th: Absolute Heat shows considerable Effects in Respiration. dense & cool air we know favours Respiration, but a hot air w.h is always rare is always introduced in less Quantity & therefore the Dilatation of ye Lungs lessens. hence the Blood is more difficultly transmitted thro the Lungs, & upon ye: hai: of its quicker Circulation in ye Lyste it is more apt to stagnate there.

But all these Absolute ~~Effects~~ powers of Heat have relative Effects on an animated Body. Very Temperature of ye Air beyond 62.° ~~gr~~ shows ye Absolute Effects of Heat,

but diminishes ye generating power of ye System wch in some measure obviates the Absolute ~~the~~ Effects of Heat. But a Degree of Heat below 62° increases ye generating power of ye Body, by wch Means it is generally kept in a uniform Temperature. I formerly explained the Reason why the Heat of the Body is not increased in proportion to ye Heat of the external Atmosphere. — the Absolute power of Heat by rendering the Other of our nerves too rare prevents those strong Oscillations on wch animal Heat depends. we have a beautiful Analogy of something of ye same kind taking place in a Globe of Sulphur

w: accumulates & retains the Electricfluid only in a certain State of Density. the Moment we under it fluid it looses its Electric Matter.

Our Sensations of Heat are greatly diversified by the State of our Bodies. Thus if I take 3 Vessels each of them filled w: water One of 60° Another of 50° & the third of 70°: if I put my hand in the Vessel of 70° & then put it into the One of 50° I feel an evident Coldness, & vice versa if I plunge it first into the One of 50° & then in the Vessel of 70°:

But the Absolute Degrees of Heat still continue to Operate, for the Effects of the Heat from 60° to 70° are considerably greater than the Effects from 50° to 60°. Altho' the Sensations may be nearly the same.

The Effects of Heat are likewise diversified by the Ordinary Temperature which is agreable to the Body. thus a Change of Heat from 50° to 60° is scarcely perceived, but a Change from 60° to 70° is sensibly felt.

Heat is never a powerful or

painful Impression untill it exerts its Absolute Effects. It is only a degree of Heat Above 98°: that proves painful or stimulating.

Heat generally acts unequally upon the System i.e more upon ye Fluids than the Solids inducing Expansion Elasticity &c ~~upon~~ in them. hence Plethora's & Accumulations of Blood are more frequent in ye Spring than at any other Season upon ye Acc^n of ye Heat not acting equably upon the System.

Heat acts differently upon Systems according to ye Temperature they have

been accustomed to. Thus a Man going from our Climate to ye West Indies is more apt to be affected w: the Heat than a Person born there, While a Native of the West Indies is more apt to be affected w: Cold here than a Native of Britain — the Reason why Strangers are so subject to ye Yellow Fever in ye West Indies may easily be understood from this.

Let us now Speak of ye Absolute Effects of Cold.

1 Absolute Cold condenses ye Others of our Nerves & thus lessens Sensibility & Irritability.

2: It gives a firmer & more tense simple Solid, w: gives more quick and

as $\frac{9}{10}$ of mankind live in a Degree of Heat below 62°.

strong Oscillations wch in some measure obviates the Inanimability induced by ye Cold. it never sinks ye generating power of Heat below 98° no more than Heat encreases it.

3rd It condenses the Fluids & acts the Reverse upon them to wch we said of Heat. —

Dep.

∴ There are many Means of Obviating the Effects of Cold in our System viz

1st It encreases the generating power of Heat when applied in a certaine degree.

2nd It is a powerful Stimulus & prompts the System to exercise wch we know

(a) not only so but it actually stimu-
-lates the System itself. this every
One must have experienced after
plunging their hands in snow, or
very cold water. —

obviates the Effects of Cold. 2d
3d It encreases Perspiration w.ch acts as a warm Bath to the Body. this Atmosphere is confined by our Cloathing. y.n Cloathing is warmest then w.ch receives & propagates Heat most such as Wollen &c — the looser a Garment is the warmer as it confines more Atmosphere in it. the Chinese all wear Garments of this kind lined w.th Furr. Blankets are always warmer, the looser their texture are. Our Houses likewise prove warm by confining Our Atmosphere. hence y.e greater number of People in a Chamber the warmer it becomes.
4th The Effects of Cold are obviated by

Artificial Heat.

The Effects of Cold ~~not~~ independant of its acting as a Sensation are

1st To induce Contriction in all imitative parts such as ye Lungs, & sometimes over all the Surface of the Body. in this manner it often brings on Fever.

2nd This Contriction determines ye Blood more plentifully into the Viscera. demi=nishes Perspiration & encreases ye Urine, as well as ye Perspiration from ye Lungs. — It likewise determines ye Blood to ye Joints, & hence the Cause of Rheu=matism.

3rd Cold acts unequably upon ye System

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# of Relative Cold

viz: condenses the Solids, while the Fluids remain the same, or rather an Often rarefied by the Heat generated by the Stimulus of the Cold. from this you will easily understand ye Theory of Inflam^n^: in general & of Rheumatism in part^r^: especially when ye Cold is applied to One part of the Body Only.

But 5^ly^: the Effects of Absolute Cold are diversified by the different States of Excitement in the Sensorium. Cold we know tends to destroy ye Mobility & Excitement of the nervous Other, but from its Stimulus it Often rather induces an Excitement of ye Sensorium than diminishes it according to ye different States of the System. It

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depends upon the Nervous Other being in different Capacities of being acted upon.

— I am sorry I am obliged to conclude this Subject so Abruptly, but I am necessarily called out of town. & as the Season is so far advanced I shall proceed next to the Methodus Medendi.

Methodus Medendi

This is either Empirical or Dogmatical the 1st Regards no Indications nor does it enquire into the Qualities of Medicines the 2nd enquires into the Operation of Medicines & the state of the System in wch they are given. I am determined to treat the Subject now under Consideration in this last way, but shall derive all the principles I offer you from Experience.

The Method: Med: has been divided into 4 parts 1 Conservatoria
2 Preservatoria
3 Curatoria
4 Medicatoria.

The 1st Relates to the Preservation of ye powers of Life. It is sometimes called Indicatio vitalis

The 2nd consists in defending ye Body by ye action of the potentia Medicatrix. This is likewise called Indicatio Prophylactica.

The 3rd consists in changing the proximate Cause of a Disease so as to restore the Body to Health.

The 4th Is when we dont know the proximate Cause or cannot reach it, in wch Cases we order palliative Remedies.

These Divisions of the Methodus Meden-
-di are unnecessary. the 3:rd or Indicatio
Curatoria comprehends all ye rest. I
I shall confine myself ~~only~~ to it alone.

Most of our Systematic Writers lay down
general Rules in ye Medendi Methodus.
- in Imitation of these I shall deliver
a few wch shall be very short & shall be
by the way of Strictures on Dr Hoffmen's
Rules.

His 1:st Rule is to follow Nature. call
Physicians from Hippocra to Lydenham

& downwards have declaimed on this subject. The System I grant easily restores slight Deviations of its Ballance. - many particulars might be brót in Illustration of this w:ch you may recol:lect when we spoke of the Action of Heat & Cold. - many remote Causes of Diseases excite the System in such a Manner as to remove themselves. in a word then it appears very evidently that there is a "vis Naturæ Medicatrix" but still I say the powers of Nature have been too much extended.

1st This has arose from an Opinion that the soul was diffused thro the Body & superintended all its Motion - This was Stahl's Notion - or 2dly that the Deity directed it. - This last too Absurd to need Refutation. - The 1st is refuted by Dr Whyt - it supposes the Divisibility of the soul - - likewise its being employed about several things at the same time each of wh are Absurd & contrary to all sound Philosophy. - What then is Nature? - The same in the human Body as in the inanimate Parts of the World. - - a conserving Property wh acts mechanically & possesses neither wisdom - Power nor Goodness in the human Body. The same in Vegetables as in the human System. Trees yield to bud but return again - when opposed form their Growth &c

The Stahlians[a] imagin the Soul acts in curing all Diseases, I do not suppose it depends upon the Mechanism of the Body. There are many Diseases in w: the Efforts of Nature do nothing such as Palsy, Apoplexies. many Spasmodic Disorders - Jahiri &c. But the Efforts of Nature are often hurtful. every Stahlians[c] acknowledge that there "Anima Medica" commits mistakes. Physicians I say then have talked too extravagantly of the powers of Nature. the progress

Here understand y: I believe all
Nature to be under the Administra-
tion of a Being infinitely Wise -
powerful & Good - ~~But~~ who will
overrule even partial as as to
make it contribute to the gen:
Good of the Universe - But Evil
we have - we see it - we feel it -
in every Part of Nature - Storms
Thunder - Lightning Insects &c
are real Evils - all must confess
this - Altho' they are overruled as
ex to contribute some ways to the
well Being of the World - To return
y: enquire in w ~~Case~~ Diseases
Nature helps - very few - corrects
slight deviations only - Intemper
takes away our Appetites - call
for Drinks & light Aliment -
Be wound from sharp Bodies

of Medicine in my Opinion has been much retarded by paying too much attention to Nature & by being too diffident of the powers of ~~Nature~~ Art.

Dr Hoffman's 2nd Rule is to evacuate all Morbific Matters as soon as they are formed. this is a good Rule & strikes directly ag.st the former One, as it over-throws all the supposed Notions concerning Concoction &c. his 3rd Rule respects the last, & therefore deserves no Obviation.

In all Fevers ch. pass thro' three Immutations ch. w.h they are most used to circulate

thro. thus ye water of a Dropsy sh: be evacuated thro ye Kidneys or ye pores of ye: Skin.

See Dr Hoffman's Other general Rules in his Works. they are most of them so plain that they require no Explanation.

I shall now proceed to the Cure of Diseases, & for yn purpose I have given you a Table wh: comprehends all ye Medicines used in curing Diseases of the Solids & Fluids.

excites Inflam.n: - In Nausea
Vomiting & a few more.

4 In W: She does no Good - In
some we shall find inactive -
- some want wisdom - Others
Power Others Goodness -

1 Inactive - small pox - no
Notice when 7th Contagion is rec.d: -
- no Reputation &c - The same of
many Fevers.

2 Wisdom - Fevers - Depurating
weakens the System -

3 Power - cannot often overcome
the cold Fitt of an Intermittent without
warm Drinks &c.

4 Goodness - neglects to punish us
in Youth for our Excesses - but
seldom spares us in Age. -

Indicationes Curatoriae

I In Morbis Solidorum

1 Simplicium

A suppeditare materiem deficientem per
Nutrientia

B absumere superfluum per
Erodentia

C roborare laxam per
Astringentia

D laxare rigidam per
Emollientia

2 Motricium

A ciere Motum per
Stimulantia

B minuere motum per
Sedativa

C coercere Motum inordinatum per
Antispasmodica

II In Morbis Fluidorum

1 alterare vel immutare

A aggregationem

a spissam per
Alterantia

b tenuem per
Inspissantia

B misturam praesertim correctione Aeris

Shall now point out a few Diseases in w.h the Want of one two or all these Appear.

1: Fevers - Nature exerts herself only partially to Obviate Debility - some Determinations to y.e Brain - Viscera & Bowels which bring on the worst of Consequences - In Intermitting the Frequency of Paroxysms instead of Weakening the Fits encrease y.m: and in Obstructions - Dropsies &c - In Nervous - Delirium or Insensibility Nothing called for - In Inflam: Nature tends to suppur.n: & Gangrene

2 Plethora - Nature empties it - not thro' the Nose - but into the Brain or Lungs. -

3 In ~~Hypocondriac~~ Melancholia

a Generatim per
Demulcentia
b Specialim per
α Antacida
β Antalkalina
γ Antizumica

2 Evacuare
A Humorem unicum erempe
a Mucum
Errhina &c
b Salivam per
Sialagoga
c Urinam per
Diuretica
d Perspirabile per
Diuretica + Diaphoretica
Sanguinem per
α vias naturales per
Emmenagoga
β vias artefactas per
Phlebotomiam &c
f. Serum per
Vesicantia &c
B. Humorem vanum per
a Emetica
b Cathartica

— the leads us to solitude — Com:
= pany & Amusement the only Cure.

4 In too great irritability or Inflam:
of the Stomach — Vomiting excited —
— Bleeding indicated — no Natural
Hæmorrhage. — Antimonials necessary —

5 In Dysentery — Purging immoderate
— only to be checked by promoting
another Evacuation —

6 In Palsies — Apoplexies — & all the
train of nervous Diseases — Nature
inactive

7 In Hæmoptoe — Consumption &c
Nature overacts her Purpose —
Cough retards instead of hasten
the Cure. —

Of supplying the System

Every Treatise of the Methodus Medendi has proceeded in this Way marking out particular Indications from the several Heads of the Cause proxima & reduce them to Classes from our systems of Pathology -

It is difficult & is far from coming near Perfection. Most systematics tho they differ in Theory have agreed pretty nearly in this: & I only give mine as a Syllabus & not as proper. I have first made a Division into the Diseases of the Solids & the Fluids.

I begin by considering the Indication of the simple Solids viz to supply defect in any Part. This is done by Nourishment. It is first applied to the Fluids & relates to both solids & Fluids when deficient.

I shall not always be able to keep to this Plan & often we must consider the Matter employed before we can consider the contraindications.

With respect to Nutriment we know extremely little of the Theory of it applied to particulars as one Animal's nourished by Grass another by other Animals. I shall consider what Experience has taught us with regard to the Matter. It is either vegetable, animal or of an intermediate Nature -

We are told Nature errs on two sides only - too slow - or too Violent - - not so - In the cases before cited - we must & the most humble Minister of Nature does act directly in Opposition to her - who would ride a Horse y: required Alternately the Spur & the Whip - Sometimes to be turned round - Natural: = ways to be distrusted - In slight Cases: may do - But No: never be subjected to Theory

I think the Vegetables may be divided into three Kinds
1 Sugar. 2 Farina 3 Oil.
Whether or not there is a 4th Class of mucilaginous Matter distinct from any of these may be an Enquiry, but I think it may be reduced to one or other of the former. The Vegetable Matter is of great Diversity & I am persuaded that many more Subjects contain alimentary Matter than what are in Use, as Woods, Barks &c & we only reject soft Matter as connected with some deleterious hard. I think the three Heads I have mentioned can include every form we know of Aliment & I shall first consider the one we are most acquainted with.
With regard to the Farina there is no Doubt of its being an Aliment & is in the most general Use in all Nations. Oil we know is often taken in but it may be doubted if they dont only take it to moisten the solid Parts more than to furnish a Nutriment but we take it in such large Quantity & sometimes alone that I think it must enter into the formation of lymph & animal solid especially as we can find it in the form of a Secretion & besides finding it in its Native form thus used, we find that it enters into the Composition of the most common aliment, viz the Farina.
With regard to Sugar the Doubt may be as considerable

as we dont find it employed alone as Nutriment, but we often take it in great Quantity & besides this the Peo: ple in our Colonies are observed to become uncommonly fat in the Sugar Season & we find it the principal Part of Grapes, Figs & all such sacharine Fruits wh are remar: kably nutritious especially when dried. Whole Nations live on Dates & Figs, were long the Diet of the Athlets. It is in great Quantity in all vegetables besides being added as a Condement & especially the Farina contains it in very large Proportion even prepared & can by a Process almost entirely be converted & I am apt to think that Farina is nutritious as it contains Sugar & I imagine the true nutritious Matter is Sugar uni: ted wd Oil. We know that they do not unite in the Body when not joined before they are taken in. On this we should expect that the Degrees of Nutrition of Vegetables should depend, & from this a Scale of the different Aliments may be formed.

1st Lowest I would put the succulent herbaceous plants as Spinnage. 2d succulent Roots, Turnep. 3 mucaceous Fruits. 4 Cherries. 4th sacharine fruits, Grapes. 5 These Dried, Raisins. 6. Farinaceous Roots, Potatoes. 7 Piths of wh we have only one, Sagoe. 8 Farinaceous Seeds, Rice &c of a higher Degree than the Cerealia stand- 9 Leguminous Seeds, pease higher 10 Nuts of an oily Nature

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Almonds & lastly it Pure Oil itself from the Olive as a Fruit & several Seeds.

The only Instance of an intermediate Aliment is Milk, it is animal in some Measure, but is from the most immediately recieved vegetable Matter & from analysing it we find an Acid easily evolved of a fermentative Nature containing a great Deal of saccharine Matter & a great Deal of Oil is diffused in it & is the I think before their proper Union. It has also a great Quantity of Lymph united with it fully formed. In this intermediate Aliment we have also a Scale of Degree of Nutriment. If you separate the Oil from the Lymph, you have serum nearly the lowest Step of the vegetable Aliment. A higher Degree is got from Whey taken from entire Milk. The serous & the coagulable Part in Butter milk gives another Degree & this depends on the Manner it is taken, as the Milk was previously deprived of its Cream or not then Milk itself, higher still Cream & still higher pure Butter. As the chief part is chiefly animal Lymph, it is the most nutritious of all especially if taken from entire Milk.

I next shall consider animal Food.

Here we have Difficulty of setting Limits I believe as at Regard to Vegetables they are all capable of affording

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Of the various animal Aliments

Nutriment & we only reject them properly as containing Poison, as the Case is of some Insecta, Vermes, Pisces & Amphibia. The Variety of Animals extend to 6 Classes. The carnivorous Animals are now generally excluded tho they have been used at Times. We find that there is a Degeneration takes Place in our Bodies from the lowest vegetable Aliment to pure animal Matter. We can contain Vegetables in our System longer than animal Food & especially carnivorous Animals & especially the mamalia & Aves of them. & first we should chuse those who naturally live on vegetable Food alone. then those who can live on either animal or vegetable & such as them as we hence confined to vegetable Food alone. last the carnivorous. those that live entirely on Vegetables are least alkalescent & in the Degree according to the Nature of Vegetables. 1st those who live on succulent Vegetables. & those that live on Grain tho it renders many of them more grateful to the Taste & perhaps more nutritious. 3. the Exercise they employ renders them more alkalescent & is the foundation of the Cars ferina as the Deer differs from the Sheep. The Animals may differ in this Respect tho the Circumstances are all the same as the Goat & Sheep. There is besides this a Difference in their Dung more or less perspirable. Fish are less perspirable than

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than other animal Food as Birds. Young Animals less than old & they have been thought more nutritious, they are of slower Digestion in the Stomach however as may often be seen from weak Stomachs. I think this may be explained from our Aliment undergoing a Change to a saline State & more or less difficult Evolution of it to fit it to pass off by the secretions I imagine may make the Difference. I must now speak of their Use to supply Deficiencies. Here I might enter on the whole Extent of Dietetics, but it is too large & I shall only speak of them as Remedies for particular Deficiencies.

The general Effects of the Nutrientia are to fill the Ves:sels by supplying the Quantity of Fluids, & the chief Effect of this must be to increase the Tension of the System, wh you know greatly encreases strength & it must by dis:tending the Blood-vessels & Heart prove a considerable Stimulus to the whole System, & also they produce these Effects by operating directly on the Stomach, wh affects the Tension of the whole so much by stimu:lating it more or less they also stimulate the whole System. This is the general Operation of the Aliment but it is difficult to explain when we consider it more particularly.

The Action of the Stomach seems to cause a Fever in

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the System in every particular first producing a cold or chillness in some Degree & then a hot fit. This I think is caused by the Action of the Stomach wh causes a greater flow into the Stomach & in some Measure into the whole, this may be in a great Measure from its Distension, but I think it must also act from its Stimulus as an acrid. as we find the Fever vary from the Nature of the Food. It is greatest after eating animal Food. Both animal & vegetable Food contain saline Matter & this is evolved in Digestion but this saline Matter appears considerably different in its Power of stimulating the System. The vegetable food contains acid substances very dilute & possessed also of some Degree of a sedative Power. Animal Substances contain a more stimulating saline Matter & that evolved too in a great Measure.

I would carry this further & say that the Difference in the stimulating Qualities distinguishes the several animal Foods from one another, the old from the young. The old have it most evolved & in the same proportion should stimulate most in the Stomach. This agrees also with the Time required in Digestion & I think this saline Matter must have a considerable Influence in modifying Digestion & we find that animal Matter advancing to a putrefactive State, excites it more quickly

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Cases where Nutrientia are required than any other. In weak Stomachs of chlorotic or hysteric Women we often find roast Beef easily digested while a Chicken will remain for twenty four Hours in the Stomach. Along with this I think it is probable that the Stomach is endowed wth Fractability according to the State & Progress of Digestion & that the different Degrees of Ferment gives a peculiar Stimulus & different State as to most People we find that give a greater Sense of Distension & Weight & more thirst than Beef. - This is too extensive & difficult to be applied to all different Aliments. The Nutrientia are to be employed as Remedies where there is a Deficiency of Fluids which may happen from —
1st. Evacuation from Lesion. 2 Diseases consisting in encreased Evacuation. 3 Interrupted Supply when the usual Evacuations continue. 4th. Impeded Assimilation commonly attended wth encreased Evacuation. —
There are some Cases not to be removed by the Nutrientia alone, as where the assimilating Powers are much weakened, the various Cases of wch I cannot point out. It is to be known by want of Appetite for Hunger always appears to be a Consequence of finished Digestion. This is our Guide especially if attended by Aversion, Disgust or Nausea. In these Cases giving Aliment is generally lost Labour. It may justly be made a Question whether

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or not we should ever force Aliment to be taken when there is no Appetite or even Aversion. I can easily conceive a Case often mentioned by our good Women where the Stomach is distended with Flatus & where forcing down a little Food as they direct may either expell the Air or cause its Change & Reabsorption & there may also be other transitory Affections that a little Aliment taken down may remove & appetite be produced: what they are I cannot venture to say. A more considerable Case where Aliment is forced is where there has been considerable Inanition & the Cause of it still subsists, here our labour will be fruitaneous whether the Cause produces improper Assimilation or not.

All these occasioning Inanition & weakening the chylopoietic Viscera have a considerable Effect in both Ways, but the Cases of Inanition subsisting with the Cause are attended with encreased Impetus, such are the Cases of Fever, Inflammation & Hæmorrhage, & also it may happen in the Case of encreased Impetus depending on Lacity. In this Case especially where Inanition depends on encreased Impetus, it is that the Choice of Aliment is necessary. We cannot long delay the throwing in of Aliment & must use that wh stimulates least chusing the vegetable & avoiding animal Food.

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Here we necessarily suspect a Cacochymia wh might be conceived in several Cases wh I believe rarely ever occurs & only requires a Choice of Aliment wh I imagine is here the principal or only remedy & that it is this & not abstinence from food that is required.

With Regard to the Administration of Aliment there are but a very few general Rules necessary. It must be accomodated to the State of the assimilatg Powers with respect to our Strength & as they are more or less impregnated with assimilating Ferments & there is no Case of Weakness where the assimilatory Powers are not in some Degree weakend & we should first give a small Quantity of Aliment & then encrease it & this Rule is more forcibly established if we attend to the Whole System.

The State of the Vessels is soon in some Measure accommodated to the Quantity of Fluids & when there is any Deficiency you cannot restore the proper Quantity all at once. All the other general Rules respect the Choice of the Aliment & are either to be drawn from what I have said above or from a full Detail of the Materia Medica.

B This is not accurate with regard to System. I have

Of Roborants for Laxity

not given a compleat set of Indications & this is the only chirurgical one. It is of little Consequence & I could not treat it without entering on the Doctrine of Ulcers &c. This is a very complex Indication & I confend it to its Application to the simple Solid, but it is most generally applicable to the solidum vivum. The Remedies for this are very various & we cannot speak of them till we have considered the Cases to wh they are applicable.

1st The State of the simple Fibre may depend on the original Fibre giving Laxity.

2d It may arise from the different Proportion of solid & fluid: (this might perhaps comprehend the other) & arises from various Causes as applied in ye Nutriment or from weakness of the exhalant Powers or from viscous Humours applied without from Inundation & lastly the proper Degree of Solidity being given it may depend on Tension or Pressure. As the Same occurs in the moving Fibre it may be referr'd to two Heads 1st Atonia. 2d Palsy.

1st Atonia arises from a Cause acting on ye moving fibre itself

2d Palsy arises from the moving Fibre being weakenn'd from Causes interrupting the nervous Influence from the Sensorium.

From these Cases the various Roborants are indicated

and here I invert the Order of the Causes & say that in Palsy the Roborants must be stimulants.

In the Case of Atonia we see that it may depend on a Laxity of the simple Fibre & it depends more particularly on want of Tension & perhaps on some other Causes we cant explain as the Operation of Sedatives & this is to be cured by all Means of restoring Tension partly by Exercise, partly by Cold & too great Heat is one of the most frequent Causes. Lastly as depending on want of Tension it may require the same Remedies as the Case of Palsy. Exercise is one of the most powerful Means & all Medicines that condense the Solids as the Class of Astringents.

1st The Use of Stimulants. 2d The various Means of giving Tension. 3d Exercise. 4th Cold. 5th Astringents. The three last are what I am to speak of here.

1st Exercise is also to be consider'd as a remote Cause of Disease & therefore I shall speak more generally of it here.

1st It is plain that the Function of our Fibres depending on Flexibility or Elasticity depends on the mobility of the Particles on one another & this is in a great Measure regulated by Exercise & of Consequence it

strengthens the System.

Our Solids are formed of Fluids & therefore the Nutri:
ment must be in a fluid form, but there are excha:
lant Powers that encrease the Density & Strength.
The Growth of the Body is always accompanied by
stretching Powers & as it acts on elastic Bodies, it
gradually gives more Firmness & Cohesion & of Conse:
quence Strength. Exercise is the chief condensing Po:
wer, along with Exhalation which it encreases & pres:
sure from Motion or the Distension of the Vessels has
also considerable Effects. It is also probable that
the superfluous fluid is exhaled by the Power of
Heat & this is greatly encreased by Exercise, so that
all these tend to shew how Exercise strengthens the
simple Solid Laxpas: as they use Exercise. This affects
particular Organs, but the general System must be
rendered dense by the closeness of the cellular Texture,
& this is especially brought on by Exercise as is the
Cause of the Rigidity & sometimes Ossification of the
Arteries in old Age. While Exercise has these Effects on
the simple Solid it ~~as~~ also has considerable Powers
upon the moving Fibres as a Stimulus. Formerly

said that Repetition of Motion facilitates the In:
flux of the nervous Power to that Part & by Custom
also the Effort becomes greater & it must in time
streng then the Tonic Power over the whole System, & the
ready Influx of nervous Power. Exercise also expedes
the Circulation & excites it over the whole aortic & pul:
monic Systems, & this especially affects the capillary
Vessels & merely by the force of Impulse this is en:
creased independant of the Quantity of Fluids & this
must promote all the Excretions & Secretions, by wh
Exercise not only strengthens the Solids but supports
& induces the proper State of the Fluids, hence is the
chief Means of preserving Health & a principal Re:
medy in the Cure of Diseases. It is forbid in an en:
creased Impetus of the Blood, unless to a particular
Part & that internal wh may be remedied by Exercise
determining to the Surface, but independant of
this it may be carried to Excess, produce too great
Impetus of the Circulation, Haemorrhage & various
errores Loci. But when carried to excess also it may
overstretch the Muscular Fibres as that when employd
to strengthen the System it must be within these

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Bounds. In obstruction of the Fluids it may be a considerable Remedy, but the Objections to its Use are more remarkable are more remarkable against the deobstruent Effects of it. It may produce spas:modic Effects, which may make them more obste:nate & we know that whatever encreases the ner:vous Influx is always followed by Languor & therefore it must be limited on this Acct. Hence its Limitation & the Difference of the several Ex:ercises we employ. The voluntary Motions, bo:dily Exercise principally produce Languor & bring on increased Impetus by expeding the Motion of the venous Blood. There are other Kinds of Exercise nearly independant of the Action of the Muscles got by the various Kinds of Gestation, as Sailing, going in a Machine & Riding. The chief Effect is here by the external Pressure & this affects the Circulation principally, for tho the Body appears seemingly at Rest, when the Motion is equable, yet when it stops, we find the Determi:nation it has to go forward. This greatly affects our Fluids & on the least Variation of the Motion

the fluids may be found to be impelled. This occurs more or less in all Gestation & from this I imagine they act so much as deobstruents & overcome Obstructions as much by determining to the extreme Vessels & along wth these for the most Part some Degree of muscular Motion concurs. The Effort is gentle but constant & can be bore longer than bodily Exercise.

2^d Cold. As acting on the inanimate Matter, condenses it, but this only on the Surface & not considerably; next it condenses the fluids & allows the Solids to contract by this Means & to this I would add its Condensation of the nervous Power wch must give the whole solid Parts more density. next its Effects are still more considerable to our System as sentient to which it acts as a constant Stimulus & from this it produces its full Effects in the Contraction of muscular Fibres. The other Effects of Cold are secondary, its Effects on the Surface are propagated along contiguous Membranes & the Tension of the whole is increased & also its Stimulus is continued over a great Part of the System particularly along the whole sanguiferous System, whose Action we find it often excites & from this & from its increasing the Tone it promotes Perspiration & all the excretions & also gives Activity. There seems to be

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a nervous Communication propagated whether by Tension or Stimulus by which the Application of it to a particular Part, to a finger, may spread its Effects over the whole System & produce a general Stimulation. This seems to be connected merely with a Sense of Cold as often the Body is of the usual Heat when tried by the Thermometer. Cold is a Stimulus to excite the Energy of the Sensorium & thereby the whole System. The Motions of the System I have said are more directed by final Causes than we can explain & Cold by this occasions a Reaction of the Sensorium which obviates its Effects & this not only gives momentary Tension but invigorates the System. There is however something more in the Effects of Cold than I can explain. The Tonic Power depends on the Density of the solid Matter of our Nerves & especially of the Other. If the Elasticity is encreased with greater Rarity, it does not answer the purpose but gives Debility & there must be a certain Balance of Elasticity & Density from Cold & it is therefore the most proper Stimulus to our System & this should be much above at times that State of Air we find agreable & greater than the Cold of our Bodies always. Heat destroys Vigour & lessens the generating Power as is seen in warm Climates. The Use of the Application of Cold is easily understood from the foregoing Principles of its acting

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as a Sedative & thence destroying Life if in too great Degree of its Producing Constriction hurtful if not followed by Heat, so it is always unsafe if it does not stimulate, & if it is much greater than the degree of our System, it must be transitory to escape. All this applies easily to cold Bathing not so to cold Air. In Hæmorrhage we know how necessary it is to keep the Body cool, as Heat induces a delicacy but the Degree of Cold is not ascertained tho they are now trying it in the small Pox.

3 Astringents are a set of Medicines whose Uses are ill ascertained but I shall mention some Facts with regard to them & some Conjectures otherwise.

I suspect that Astringents are such Matters as coagulate a Part of our Fluids & act on the Solids as of the same Nature. They may be reduced to three general Heads, viz 1st Alcohol 2 Acids 3 Styptics!

The coagulating Power of Alcohol is well known & also its hardening the Solids. It is applied externally to harden the Surface & strengthen Cicatrices. I know of no other Use to the simple Solids. It acts also to the moving Fibre as a Stimulus & sedative.

2d Acids coagulate Fluids & harden Solids & have both a Stimulant & astringent Quality. Where they act as astringents there is probably a Diminution of Activity,

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of the nervous Power, & then they act as Sedatives, but in a certain State they dissolve animal Substances & stimulate more than constringe & must be more diluted to shew Astringency. Both alkohol & acids have been reckoned powerful Astringents from their stopping Haemorrhages but this is found rather to be from their coagulating the Fluids & forming Thrombi in the patulent Mouths of the Vessels rather than constricting the Solids.

3 Styptics are of various Natures more than we can speak of. Acids combined with a certain Earth that dont neutralize it entirely forms a Styptic. Of this Kind is Alum & it has led to a false Notion that all Earths combined wth Acids form Styptics, but I know of none else of that Class & on the Contrary they dissolve the Blood & if ever they have appeared astringent it is from their refrigerant Powers if they are exactly saturated. Most metallic Salts have similar Effects to Alum they unite wth Acid & give it a Degree of Concentration As thus partially saturated the acid coagulate animal Fluids & may seem astringent & it is here that some of them form powerful Stimuli. The Astringency alone appears in Acids joined with Lead & Iron. Stimulus alone appears from Silver, Antimony & Mercury & a Mixt Operation from Gold, Copper & Zinc

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The Effects of Tin & Arsenic are not sufficiently understood tho the astringency indeed appears in Tin in some Measure, but is combined with the strong Stimulus of Arsenic. Acids appear to enter the Composition of styptics as styptics have been held the vegetable Acerbs their Acidis covered but by what Means is uncertain but we know that it is acid concentrated & fixed in solid Matter. Austere Vegetables are sensibly styptic tho without perceptible Acidity but when we consider how easily the acerb pass into the austere we are led to think that here an Acid is combined with some Earth & it may be enquired whether our not Acid is not always the Cause of Styptitity. The vegetable astringents are known by their absorbing acid from Metals. They being Iron to a Black Calx & are hence the Foundation of Ink. Thus far Acids operate on our simple Solids but not perhaps very considerably for there are Doubts if something else does not concur with the Operation of Styptics, in giving Density as in Tanning of Leather great Pains is taken to retain the cellular Texture but away the Oil. If we could not determine their Effects in any other way but the simple Solids we should find them of little Use but they operate also on the sentient

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Parts. A small Quantity of Alum or Saccharum Sa:
turni applied to the Tongue will produce sensible
Constriction over all the Fauces, Whereas Decoctions
impregnated with them or astringent Vapours do little
I imagine in Part from their fluid Form, in Part from
the Surface being lined with Cuticle & only act con:
siderably on the tender Parts as the Eyes, Mouth &c.
The Theory of their Operation internally is uncer:
tain as we cannot suppose that the small Quantity
carried to the Vessels can have much Effect in Hæmor:
rhages & any Effect they have must be from their Topi:
cal Constriction propagated to other Parts. The Sto:
mach is the most proper Organ for this as so much
connected with the System & here the vegetable
Astringents have small Effects compared with
the Fossil. On this footing the metallics have been
called Narcotic. they are not Hypnotics like most
Sedatives but have an Operation sui Generis which
remains to be explained.

Astringents are strengtheners as changing the Ten:
sion but in a higher Degree sedatives & pernicious.
Astringents often give Constriction that prevents re:
currence of Atonia that would occasion Spasm &

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Convulsion. The Operation of Bark thought generally specific certainly produces Effects in this Way but there are other Powers joined & think evident. It is surely astringent & other substances shew the same Effects, but this is not all, for those Medicines which have the Power of Bitters as well as astringents have not its Effects & yet the Ague was cured before it was known.

One Difficulty remains with regard to Bitters, they certainly strengthen but do they act as astringents or not. If they act as Astringents it greatly embarasses our Theory & we have difficulty of supposing that they act as stimulants.

They affect the nervous system produce a strong Contraction where they are applied & invigorate the Circulation hence they act as Aperients & deobstruents as well as astringents. This appears to be according to their Degree, but there is considerable Difficulty both in Theory & Practice. If Sacc: Sat: is given to stop Haemorrhage internally the only way we can suppose it to act is by propagating a Construction from ye Stomach to that Place, but we should think that it would affect the whole Vessels equally & produce great Change in the Determination & this can not be obviated by any sedative

Power but probably it may effect chiefly the Part wh has a great Degree of Excitement. If Hæmorrhages are merely passive depending on Relaxation we see how they may be of Use but Evacuations are most commonly from encreased Impetus & then we see they may be hurtfull but may they be applied externally. If the Evacuation is violent we must hazard something but it certainly endangers encreasing the Disease over the System & was in the Part & it is always dangerous to interrupt the natural determination, but they have sometimes been found of Service & I think this may be explained. There is I think no Case of encreased Impetus that does not act by Exacerbations & Remissions as a Bleeding from the Nose is often a Symptom in the Hot Fit of an Ague & a regular Hæmoptoe is sometimes cured by the Bark on the same footing as an Intermittent is so in excessive Menstruations even uterine Hæmorrhagy & Fluor albus. Exacerbation & Remission appear & I think they may be of Service & only have failed from our employing too small Doses.

Of Emollients

Emollients may seem the converse of the other & appear to apply to the simple Solid & moving Fibre, but the relaxing the Tonic Power of moving Fibres to the sedantia & antispasmodica & here only consider the Means of relaxing rigid simple Solid. The Means are always either 1 Water. 2d Mucilage & 3d Oil.
I know not if there may not be a Head of Means of dissolving animal Solid, but it is too subtile Water is by far the most powerful & if we understand the Operation of one we understand the other too, which are less powerful but more durable. Water enters into the Composition of animal Solid & according as it enters they are more or less rigid as appears from many Experiments especially Dr Bryan Robinsons. Few fluids relax more than cold Water by him it is as 35 & the other as 38. & Warm Water relaxes as 78 & not so much unless Ac. Vitr. which destroys the substance, hence Water is the greatest if not the sole Emollient & all act as impregnated with it.
I here consider its Effects as applied to the Whole Surface in warm Bathing. It consists of two relaxing Powers in its Operation, Moisture & Heat. the last

not solely as assisting every Menstruum. It is
just suited as dissolving animal Matter, to clean
the Surface from Mucus & sebaceous Dirt as very apt
to concrete with Dust & obstruct the Perspiration & also
are apt to excite many cutaneous Eruptions. Hence
they obtrate & cure many Diseases.
Water assisted by Heat not only dissolves & washes off such
Matter but insinuates itself into the Cuticle & relaxes it.
& tho it went no further from affecting the subjacent
Parts, it might affect the whole System from the Connec-
tion I have mentioned. In this Way the Effects of
its Relaxation may be very great but they are more
when a Number of Nerves being expanded below it.
& not only act on them as Organs of Sense but as com-
municating with the rest of the System & may be con-
sidered as rarefying the Ether & relaxing the whole
System. Probably another Consideration is to be
included as far as this Relaxation of the Ether is pro-
per & natural it gives a pleasing Sensation & may have
considerable Effects by withdrawing the nervous power
from the Sensorium which may be restrained from
Anxiety Delirium &c & then the warm bathing may

induce the unexcited State necessary to produce Sleep. The Effects however are not confined to the simple Solid & nervous System but affects also the sanguiferous System. It is applied to the Extremities of the Vessels, relaxes them & allows a considerable Change of Determination & the Relaxation is propagated a Considerable Way. It is disputed how far it penetrates. I think from the Relaxation of the Cuticle it may affect all the subjacent Parts even the Ligaments & Bones. & it may also be applied to the Abdomen affect the Intestines & Ureters & remove spasmodic Affections from them.

The Application of Heat I have also said rarefies the Fluids considerably more than it relaxes the Solids & hence it may encrease the Tension & Impetus & the Heat of warm Bathing is found hurtful in the Cases of increased Impetus. I must say that the stimulating Powers are very considerable but are safe as accompanied by a relaxing Power but they also may take Place sooner than the relaxant, but if so tempered as to come on nearly at the same Time & are moderate they can have no bad Effect & besides this the stimulating

Powers are more transitory than the relaxant. These Principles would be illustrated by an Application to particular Diseases but we have not Time for that wh have given also the Principles for its mode of Application. I think a little below the human Heat is the proper Degree to obtain the relaxing Powers & have no bad Effects from its Stimulus but we have no Experiments to determine its Effects higher & applied for long Time. 2 Hours as in France speaks of. I am uncertain how far it may produce relaxing Powers when much continued as we find in warm Climates it is very constantly used & was especially so by the Antients without any bad Effects & its Use in promoting the Principal secretions is very obvious.

I now propose to consider the Indication of exciting the Motions of the System wh is done by very various Means which might almost include all Remedies. Formerly defined Stimuli to be either direct or what immediately affected the moving Fibre or indirect wh produces a Sensation & by that Means a Reaction of ye Sensorium,

Both these may be found to take Place in the sanguiferous System, but I always have declined entering on the indirect tho I find it as a frequent Cause of Fever but I know not how to excite Fever at the proper time and due Degree or when to do it if I could & I shall only consider the direct in this I have before pointed out the several Powers that may be thus employed.

1st Every Impression producing Sensation. These are numerous & of great use with regard to the Conduct of Health & there is an Indication afterwards to be spoke of when they are to be removed, but they are seldom given as Remedies. Most Impressions not accompanied with a reflex Sensation are seldom given & rarely taken away in Disease. The others are rarely employed nor are sure of their Operation as they act so variously on different People & are very various as the Degree of Motion they excite from the former Habit. They are frequently Remedies by Accident but are also Potentie nocentes. Anger sometimes cures a Palsy, but also often proves fatal. A Physician by Experience of a Patient may perhaps apply them, but for this no Rules can be given,

I also pass over Motions in the System that prove indi:
rect Stimuli as included under Exercise or some of them
that come under Sedatives. I then come to the Use of Ali:
ment whether as stimulating the Stomach or the Sys:
tem in general & that I have spoke of already.

2 Tonics
3 Exercise as tonic & stimulant
4 Cold as a Tonic & Stimulant.
5 Heat as a Stimulant.

There remains Electricity, Mechanical Stimuli
& the chymical Acids of which I am to speak.
1st Electricity this is a very subtile uncertain Enquiry
& I shall leave it on the footing of Experience. It seems
to act most purely on the nervous Power while the others
act principally on the sanguiferous. This Power of ex:
citing Motion on the nervous Power makes it proper in
a Torpor of it but at the same Time it may prove destruc:
tive of life & we know not the proper Limits & I think
I have seen both therefore it is always to be employed with
Caution in the lower Degrees & we are to expect most of
its Effects from a Continuance & at the same Time its
Effects are not so entirely pure but it may affect the

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sanguiferous System & the Danger I think often arises from exciting it where there is Congestion in the Brain.

2d Under Mechanical Stimuli I include Exercise & all Cases of Impulse. The last is most commonly to be spoke of as affecting reflex Sensation & the only Case I have to speak of is what is called Friction. Thus we can understand in no Way but from the alternate Motion proving a Stimulus to the sanguiferous System & encreasing the Determination to the Surface & encreasing Perspiration &c. I shall not say where this may be of Service but is particularly so joined with warm Bathing as practised in Asia. I seldom see its good Effects here as we apply it improperly dry where it must be very gentle or very long continued.

3 Chymical Acids or strictly Stimulants. Here so great Variety of Matter is employed & we can scarce see the Connection of them & I here entirely trust to Experience as I do not see any Propriety in any of them more than others a priori as Remedies. Physicians have been satisfied by finding the Action of mechanical Acrid but I could easily shew that this cannot apply to saline Matters from a Notion of these Figures taken entirely from their Figures & nothing can be more evident than that Solution does not depend on Figure & from of Observation

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of the sensitive Plants, it is evident that there is an Action of certain aetherial Matter very different from any thing spoke of in the Corpuscularian Philosophy & I have hinted at something similar to ordinary Solution of a Union of various Aethers & hinted at these in the Case of Smell & Taste & also that there may be some Cases as we see elsewhere of one Aether repelling another.

Tho we can

1st Every saline Matter soluble in Water evidently is an Acrid with respect to us especially the acid & alkali the simple Bodies & they corrode the Parts & may be supposed to destroy the Aether united with the solid Parts but the neutrals dont corrode & they must have some different Operation. Some of them seem to act as Sedatives or Refrigerants, & some of them more remarkably so than others. Common Salt appears the most pure Stimulus while others of them seem to require a Modification of the Nerves acting on the Stomach

2d A great Number of Oils are stimulants all those that are acrid to the Taste or odorous & hence most of

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the essential Oils & to these may be joined the Chy:
mical Productions of the empyreumatic & ethereal
Oils & here the same Doubts lie that lie many Chy:
mists say Oil is naturally Bland & the acrimony
may be supposed depending on a saline Matter tho'
it has not been discovered.

3d Resinous Matters, they lead us to think that the
Acrimony may always be saline as they in the form
of Balsam appear composed of Oil & a saline Matter &
in the Class of the Tetradynamia the same appears
as they seem to contain a volatile Alkali.

4 Various animal & mineral & some vegetable Sub:
stances peculiar. They all seem to contain saline
Substances especially the two first tho they are not
clearly proved; & as many of these are entirely poisonous
it would give us a Difficulty of resolving Sedatives to a
saline Nature.

A Doubt remains with regard to Bitters very peculiar.
They all contain an Oil but whether their Operation depends
on this or there saline Matter I am uncertain & especially
as they act both as Stimulants & Sedatives.

The Operation of Stimuli is very extensive both on the Part & the Sensorium & on the whole sanguiferous System. They operate especially on the Part they are applied to & by that on the sanguiferous System & I think it is probable that they act on the Sensorium by the Pain they produce as in the Stomach but some of their Sedative & antispasmodic Effects shew their immediate Action on the Sensorium. As their Effects are so much we are much limited in their Use as we are not certain as to the Degree of their Stimulus & their sedative powers. The Volatile Stimuli are mostly topical in their Effects & are momentary, if ever they are general they must in large Quantity & hence frequently repeated. The general Effect of most Stimuli depends on the Topical, it acts on the nervous System but most on the sanguiferous. They differ as their Effects are transitory or permanent. The more they act topically, they are more permanent & less when general, & hence the general may be most frequently repeated. The Topical Effects of Stimulants are Evacuations, as they operate on Excretories & I think if they are applied to excretories

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they may all have this Effect, in place of the Notion of specific Stimuli adapted to particular Organs only & I think all Appearance of specific Stimuli may be explained in another Way: The Cheif Use of Stimulants are as Evacuants & we are at a loss for a general Stimulus in Palsy that does not distrob us by its topical Effects. In the Case of Fever where the sanguiferous System is greatly excited before it is removed we should think of the Use of Stimuli, but this has long been tried & commonly w^d pernicious Effects. If ever they are here admissible we are confined to the more general & transitory Stimuli accompanied at the same time by an antispasmodic Power.

Sedantia or means of diminishing the force of Motion in the System. There are many more Occa:sions for this Head than that of Stimulants ten for one. The Powers here are very great but I think they may easily be reduced to three Heads.

1st The withdrawing the ordinary Stimuli from ye System.

A Notion has prevailed that our Bodies act as an Automaton: I believe it is true in some Respect, but as our immaterial Part is connected with a material Mechanism it would fall into total Rest were not Stimuli applied. We know that it would never have appeared in the form of a living System had it not been for the Power of Heat & could we withdraw all Impressions & of Consequence stop all Sensation it would soon become a Nonentity as happened to the Dutch Physician who took a Fancy that Sleep was the most favourable State for his System.

2d Various Means of weakening the moving Power of the System whether they require any Impressions or not.

3d Various Means diminishing the mobility of the nervous Power.

The 1st is very various & considerable as by 1st The Aliment being withdrawn so considerable a Stimulus from their Bulk & Quantity daily required. 2d withdrawing all external Impression which are to be

considered as Stimuli & some of them are almost necessary to the System as Light & Noise. These act as Impressions but especially for their producing intellectual Operations & the avoiding all intellectual Operation is a 3d Head. All these causing Anxiety, & such as are personally interesting ~~to~~ avoiding Excess of Watching which naturally alternates with Sleep. This cannot be without the Impressions I have mentioned. 5 avoiding all reflex Sensations which require the Existence of intellectual Operations some of these are direct Stimuli, others sedative as Fear, Grief &c but act as indirect Stimuli. Here I would add 6 The Gratifying of solicitous Appetites of difficult Application applied to particulars as the Gratification of ~~Lust~~ lust tosh off the Necessity of the System, it shd be placed here but in different Ages it may arise from other Causes & is difficultly made an article of Practice & the same of the Gratification of Hunger & if it is thrown in here it must be that the least stimulant. The Gratification of Thirst we can more easily allege to be a Means of diminishing the Motion of ye System as we can more easily promise on their not being

Stimulant, & they seldom are desired so by the sick here.
Another Means is avoiding muscular Motion wh affect
sensation & also stimulates the sanguiferous system as
Respiration & hence speaking. & we are next to indulge
sleep & this we do by a means that might have been spoke
of under the Head of intellectual Operations by giving
Impressions of no great force or particular Tendency as
the eolian Harp wh can lead to no train of Thought &
lastly avoiding Heat so considerable a Stimulus if
above 62° for then immediately it is felt as a Stimulus
& Cool Air is then a Means but how low this may come
we know not only to ballance the generating Power.
This gives the antiphlogistic Regimen so much talked of.
2d The Means of removing Tension which I have said
is so considerable as increasing the force of Motion.
This is done by Evacuations not induced by any stimu-
lus & one we are sure of is the Case of Blood-letting
wh I think acts chiefly as a Relaxer to be considered in
another Place. Warm Bathing comes in under this
Head in the Degree so as to relax the Skin & prove an
agreable Sensation & some other Impressions contrad

and leading to no Train of Thought. Another & all too perhaps to warm Bathing is warm Drink internally but they act but little in that Way they remove thirst, uneasy Appetite & Stimuli from Acids thrown in or generated there or in the alimentary Canal altogether. They may when taken up give Increase of Tension but they relax & from Flexibility increase the Secretions which obviates this & makes them an Article of the antiphlogistic Regimen not spoke of before.

3d Those that act on the mobility of the nervous Power, they are very numerous but I refer them to 3 Refrigerant, Astringent & Soporific. These are the Medicines more strictly called Sedatives. Its very difficult to find a common Nature in them either similarity in Substance nor Effects.

1st The only Substances to be spoke of as Refrigerants are Acids & Neutral Salts at least of certain Kinds as I think some of them are rather universally stimulant. The others & Acids are found of use in encreased Impetus in Fever. Inflammation & Hemorrhage & perhaps some others. This we have as a fact

and I imagine it is by a Sedative or Refrigerant Power as no other Operation seems to account for these Effects. In Acids the Effect might be ascribed to an astringent Power but not in Neutrals & from the similarity of their Effects they are probably of nearly the same Na: :ture. This Effect has been ascribed to an antizymic Power or a Resistance of Fermentation & particularly as Antiseptics. As such they might be supposed to operate in the Stomach but from the Quantity they can be thrown in & the Bulk of Matter they are added to I think they can have but small Effect in the Sto: :mach & afterwards in their great Diffusion they must have very small Effect & if they are sedative we must seek for another Cause. They are also spoken of as attenuants but the Quantity is too small of Neutrals & at any Rate of Acids this Effect could not occur. Of all the Acets offered their diuretic Quality is the best tho we have besides some Proofs of an equally sedative Power as we have the Effects facilitated by taking down Cold Water into the Stomach. They both produce a cold in the Stomach & then a Sweat & we may suppose that cold produces a Reaction of the System & perhaps induces

do the same, tho I dont say that it is by their producing actual Cold as they do it when dissolved.

2d Another Proof of their sedative Power is that when used as Purgatives they produce Flatulency & Atonia not in Proportion to their Evacuation.

3d Tho they stimulate we never find it of any Effect nor propagated any Distance which makes it be supposed to be counteracted by a sedative Power.

Mr Alexander finds that a Dose of Nitre diminishes the Frequency of the Pulse, but it immediately returns. The first points out its refrigerant Power but its transitory Stay does not explain its Effects in Fever, the same of cold Water.

Astringents. It is evident that if the Effect of it is to constringe the Part, it must compress & condense the Other, it must take off Mobility & prevent the Effects of Atonia & from this we can explain the Operation of the Bark but it goes further. I used to explain the Power of Lead inducing Palsy from this, but I now do not as it does it not only in the form of Sach. Sat. but in the form of Vapour & even Mercury

does this. I think the sedative Power of several Metals appears singular & can scarcely be referrd to astringency. Soporifics are the most considerable Head of Sedatives & I cannot say to how many Heads they should be divided but I confine Myself to Opium. It is known to diminish Sensibility & Irritability in the Part & in the Whole System & induces Sleep. Hence we say it diminishes the mobility or excited State of the nervous Power how I shall not attempt to explain only say that it acts imediately on the nervous Power & not on the Blood.

1 This I conclude first from the smallness of its Quantity which cannot be supposed a Ferment.

2d From the short Time required for its Operation

3 It operates on Parts entirely removed from all Connection with the sanguiferous System as in the Heart of a Frog cut out of the Body.

It is particular suited to allay Pain from its diminishing Sensibility & Irritability being diminished by it makes it fit for allaying Motions & increased Secretions.

It is however a Stimulus also & from this I would account

for its producing Delirium & the spasmodic irregular Motions in large Doses. To account for this two different Parts in its Composition have been supposed but this is contrary to all facts in Chymistry & I think it is more easily explained from a Reaction being produced in the System. Its stimulating Effects are remarkable & it leaves the System in a State of Debility tho its Operations are in some Degree transitory but there is a State of Atonia comes on wh disposes it to be affected by Stimuli & to spasmodic Contractions. It is a Remedy in many Diseases but as many of its Effects are opposite it is uncertain & either of them may be carried too far & as the Effects are followed by bad ones they are all embarrassed wh Difficulties in its Operation. I shall endeavour to obviate these & consider it as a Sedative

1st It is as a Sedative indicated in increased Sensation & increased Action but we must consider the abuse of the increased Excitement & this is always to be referred to Stimulus & is oftner to be cured by removg the Stimulus

than diminishing the Effects of them. Opium must therefore be according to the State of the Stimulus present & to its mad Effects. Opium is forbid in the Case of a permanent Stimulus in the Body especially where the sanguiferous System is excited & there is a Determination to the Brain. Then it is not only likely to be ineffectual, but is apt to increase the Power of the Stimulus. This of Opium not being admissible in Fever is one of the most general Rules in its Exhibition in Cases of Inflammatory Diathesis, & particularly where there is topical Inflammation & it is also improper in the excited State of the sanguiferous System frequent in Hamorhagy, but is this always to be observed. It may sometimes quiet Pain in Inflammation & the Effects of the Mollow in Hamorhage but in fact we dont find it useful or allowable. Its Effects are always more or less transitory & after its Operation is over the Irritation of Inflammation & Hamorhage remain & are apt to return with more Violence wh I think is to be ascribed to its

giving a greater Irritability to the System & allow the former Stimuli to act more powerfully. In this Pathologe to suppose always that its sedative Power relaxes the Blood Vessels & allows the Expansion of the Blood wh may perhaps occur & will add to the former Effects. There are however Cases of Topical Inflammation in wh Opium is of service but this is the Cases of truely topical Inflammation unattended by general Fever. We are sure of some such Cases. In Rheumatism where there is general Fever I only find it gives a momentary Relief & aggravates the Disease. But where there is no Fever & the Pain is purely topical & permanent in the Part then I think Opium is of the greatest service as is also the Case in the Toothach without Fever. I think also it is of service in many Hemorrhages particularly of the uterine Kind wh are often from the State of the Part without any general Fever

I will go further & say that Opium is admissible where there is a topical Stimulus as Calculus in the Urethra

& Biliary Ducts. They excite often general Fever & always Inflammation. Blood letting is often required but I always find Opium safe & useful as taking off the Spasm of the Duct & allowing the Passage of the Stone. This is an Exception to a good general Rule given by Dr Young.

It is again a very general Rule that Opium may be employed where the sanguiferous system is not excited but this is too general & I shall consider it under 2 Heads.

In Pain or increased Sensation Opium gives Relief, but it is only temporary unless the Cause be removed but the Pain may cease after the Cause is gone or may be cured by Opium as is the Case of Spasm. Again in the Case where there is an Effort by Nature it may be of Service as in Calculus the Duct will operate in expelling it during the digestion of the Pain. It is also proper where there is no Danger of an increased Impetus of the Fluids or a Rarefaction & this restrains its use in the Case of Hæmorhagy. If the Pain is violent

& from a permanent Cause we think we are obliged to give it to give some Relief but it must be when the sedative Powers are considerable & the Stimulus small as is the Case in Cancer. I dont think that the temporary Relief compensates the Aggravation of the Pains afterwards. It has noxious Effects also that restrict it as it inebriates, weakens & disorders the intellectual Functions: to this an Observation of Dr Young's is to be applied that in Cancers it had the Effect of doing this & encreasing the Pains at last. The Cases in which Opium is indicated are generally
1st Relating to the Functions of ye Sensorium itself—
2d Increased Motion from the Condition of the moving Fibre itself in the Organs of Motion.
3d The Same in the moving Fibres employed in the Secretions. As to the first I need not say that it is excluded in Phrenitis & ordinary Delirium but I speak of Mania where some speak of it is highly pernicious & others as the only effectual Medicine we can Use. I will compremise this & say that wherever there is fullness & frequency of Pulse wt the Appearance of the

Delirium ferox it is improper but where there are
none of these or especially where they have been removed
I think a full Dose of Opium is greatly to be depended
upon & we should employ it so as to get its full sedative
Effects & mania require a very great one & from ob-
servation of what Practitioners say on this I always
find the good Effect arise from it when it produces
sleep & given sometimes to the Quantity of gr XV in
the 24 Hours
2 Increased Motion from the moving fibre its self.
This includes Convulsion & Spasm & I observe that
whenever these continue for any length of Time they
are of Service as in Epileptic Fits we often find not time
to give them as we know in Tetanus.
The only Cases of these in wh we are restricted is
in the Case where there is Palsy or Fever.
In the first the Excitement is diminished & in
the other I have already spoke of.
It is of Use in the Repetition of such Disorders de-
pending on Atonia wh is not easily explained it re-
mained to say here that Opium when it takes off the

Excitement of the System may operate as Cold & give a more firm excitement & a more durable Tension. I think this probably occurs where the stimulant & sedative Powers concur tho of this I am uncertain but of the first Operation of it should come in when the Atonia should occur & of the Atonia comes on, when the sedative Power is passing off it may increase the Disease as we sometimes find the Case in Epilepsy where it is apt to induce Palsy unless given at the exact Period when the Return should happen, & is particularly pernicious when from a permanent Cause.

3. Increased Action in the moving Fibres employed in the various Excretions. We find that Opium can lessen the Action of the Vessels & diminish the Secretions but cannot be given when connected with Fever of the excited State of the whole System as is the Case of sweating which is difficultly & commonly wth Danger suppressed by Opium & is commonly increased. A 2^d Case is where the Evacuation can only be thrown out

by that Excretion & then the Stimulus is accumu:
lated as is the Case in morbid Matter in the Intes:
tines as is the Case in the first Stage of Cholera
where there is so great a Quantity of Bile in the pri:
me Vis. There is a Doubt when it should be
employed in Dysentery. I think this Disease
is always more or less founded on Fever & where
it is attended w^t Fever at the Time it is improper.
Again if it is considered as depending on Acrimony
in the Intestines, I imagine this should never
hinder its Use as it alleviates Pain, takes off the
spasmodic Constrictions of the Intestines & I think
the Operation of Opium is very different from other
astringents as its Effects are more transitory & it
does not while it cures Spasm stop the Peristaltic
Motion of the Guts or the Excretions from them. & I
imagine the common Source of Acrimony is the Change
of the Secretion of the mucous Glands of the Intestines
I think it would even remove this as we find often in the

case of Cough, where an acrid Liquor is poured forth by the Use of Opium it is retained & becomes more bland. Besides this in Dysentery I think the spasmodic Constructions often retard the solid Parts of the Faeces where the Mucus passes by Stool wh is the Cause of Scybala & I think this is cured by the Use of Opium. As suppressed Evacuation often occurs from a Spasm in the Excretories &c so Opium may be a means of inducing suppressed Secretion as well as restraining a superfluous Discharge.
Many People labouring under a nephritic Fit have the Pain stop when it passes along the Course of the Ureter tho no Stone is voided but a Strangury is generally brought on which must be from the Stones having found its Way to the neck of the Bladder & proving a Stimulus. Opium given here allows the Urine to be accumulated & often the Stone is passed along with it. With regard to the stimulating Power of Opium, it is clearly proved from Experiment & may be used wherever the exciting the sanguiferous System

is allowable & where we fear no Harm from its
sedative Power as we do in the Case of Palsy.
As a Cordial however I think its Use must becon:
fined to those who are accustomed to it & so as we can
from the large Quantity give it at different Times.
This is rarely practised in this Country, but Wine
is used in its Place. It has been given to cure
Intermittents & its Effects ascribed to its Stimulus
but I rather think they are so from its obviating
Atonia & by that removing Spasm & I think its Use
to People called of a nervous Habit is to be ascribed
to this & I imagine is rather from its sedative than
any Effects ~

These are Medicines wch are designed to remove irregular Motions in ye Moving Fibres. It is a very difficult Indication as we are yet much in ye dark concerning the Cause of Spasm upon ye acct of our knowing so little of ye Organization of Muscular Fibres. What I have to say therefore shall be delivered in few words.

as 1 Spasm consists in an heap of Contraction. whatever removes these Fibres further apart will prove useful such as Heat & moisture.

2nd In Spasms there may be a State of Immobility in the Nervous power

Every thing therefore ye recovers the Mobility of the Nervous power will prove Antispasmodic.

3rd: Spasm often depends on an Over-stretching of Muscular Fibres. the Cause of Inflammat: can only be derived from this. this ye Congestion wh attends it sufficiently prove. Blood letting removes this. & thus proves Antispasmodic.

4th: Spasm depends upon Stimuli acting on particular parts. Whatever therefore removes these will act as Antispasmodic. such as all sedative medicines.

5th Spasm arising from Cause 4th: & often cured by exciting a Stimulus in Another

part of the Body or by exciting some Passion of the mind. May not Bitters & Cauteries act in this way only?

6th. Atonia often lays a foundation for Spasm. Adstringents remove this Atonia, & thus prove Antispasmodic, either applied universally or topically according to the seat of the Atonia.

7th. Spasm depending on Causes 6 & 7 are cured by Stimulants especially when it is seated in the Alimentary Canal. we prove their usefulness in these Cases from Flatus being discharged (which always arises from Spasm) immediately after the taking of Antispasmodics. The

Expulsion of Flatus is in some measure a Test of an Antispasmodic Medicine. all Antispasmodics you see then are reduced to Sedative & stimulating. the Most powerful Antispasmodics are volatile Oils such as the Empireumatic Ether - Camphor Musk Castor wch contain an Essential Oil on wch their virtue depends. Alcohol proves Antispasmodic from its sedative virtues. what is volatile Alkali? I am at a loss to determine which of ye two Classes it belongs to. most of Antispasmodics are a Combination of Sedative & stimulatg Qualities.

II. De Morbis Fluidorum.

The Pathology of ye Fluids is involved in great Darkness. I can therefore offer only a few Conjectures on them. They are of but little Consequence & are in general more or less connected w: & dependant upon the State of the Solids. we are acquainted w: but few Medicines that Operate on the Fluids primarily. I shall therefore discuss them shortly.

When the Fluids are too viscid attenuating Medicines are indicated. But how is this viscidity produced & in w: Cases does it take place? For my part I know no

proofs of Lentor in the Blood. if it ever does exist it must be in ye Coagulable Lymph but we have no proofs of such a viscidity even in this part of the Blood. The natural Consistence of the Blood may be lessened by water, but in ye Body I doubt whether water ever acts in this way, for it always runs off as soon as it is poured into ye System according to w^t I said before. Neutral Salts have been supposed to thin the Blood, ~~but~~ when a Salt superabound, in ye forum it may induce a morbid Tendency of them, but I believe Salts never can be introduced into the Body in sufficient quantities to attenuate the Blood. how absurd is it

Attenuantia

to suppose ℥ij of Nitre given in 24 hours (for no Stomach can take more in that time) can thin several pounds of Blood? — Little of it mixes w: the Blood, but is washed out as fast as it is taken in. I grant Common Salt dissolves the Blood. This we prove from y Injury & Phænomena attending it, but w: are y Diseases w: require such a Medicine? & who would submit to take it in sufficient Quantities to produce such Effects? Soap is said to dissolve the Blood, if it does it must be by forming a neutral Salt w: y Acid of the Stomach, for Soap never enters into y Blood in a compounded State. Alkaline Salts are the

most powerful Attenuants we have, but these are seldom introduced in a sufficient Quantity to thin ye Blood. if they were they wd be neutralized like ye Soap in the Stomach. Here I wd observe that many have supposed yt Attenuants dissolve Concretions in excretory vessels, such as the Stone in ye Bladder. perhaps ye Alkaline Salts, after being diffused may again be concentrated in ye urinary passages, & thus dissolve stony Matter, but we have no Reason to suppose that any Attenuants whatever can possibly act on any Other Excretory vessel in the Body. May I doubt whether there ever was a Stone dissolved in the Bladder by

any Medicine whatever. We have often seen several hundred pounds of Soap & Lime water taken to no purpose in Cases of Stone, for altho' Relief has been obtained yet dissections have shewed ere the Stone presenting Bladder as large as ever.

It is hard to tell when a Morbid Lentity takes place in the Fluids. It occurs only in those Cases where all ye Functions are Obstructed as in ye Leucoy. Between here Inspissating Medicines can do nothing. the Cure of it must be attempted by Vacuations, & by such Aliment as evolve but little saline Matter, & afford a great deal of viscid Nourishment. all Vegetables are of this Nature & hence their usefulness in the Leucoy. how far are Fish - the Amphibia - and young Flesh disposed to evolve saline Matter? are they less so than other Animal Substances? I leave this Question to ye: Investigation. -

Demulcents are such Medicines as render Acrimony innocent without destroying it: This Indication is answered 1st By Diffusion, 2nd By Inviscating & covering Acrimony. the most corrosive Acids we see are rendered inactive by being mixed with a little Oil. all Demulcent Medicines are 1st water, 2nd Mucilage & 3rd Oil. 1st Water not only diffuses but carries off Acrimony from the Fluids. – I have read Instances of the venereal Disease being cured by a plentiful use of Water, but I am very doubtful of its virtues in Specific Acrimony

2nd Mucilages are much altered by the

assimilating powers, & therefore seldom enter the Blood so as to produce any Effects there. Vegetables especially of a bland viscid nature evolve their saline matter but slowly & therefore may tend to obtund acrimony in ye Blood in a small Degree.

3:rd Oil. this never appears formally in the Blood, nor can it act as an Oily Demulcent in the Body. By evolving its saline matter slowly it may tend to give Fluids of a denser Consistence. the Oil deposited in ye cellular membrane is designed only to be absorbed in Fevers, where the Tendency of the Fluids is to an acrid state. I have no great Dependance upon it as a demulcent.

Fiji oil taken in Exx in hours I am sure can do but little in Catarrhal and Defluxions, however much Physicians depend upon it.

It is hard to condescend upon particular Acrimonies. Vegetables form a great part of our Diet, & these are disposed to Acidity from ye Nature & from the Operation of the Stomach upon them, but the System is provided w: the powers of Obviating it. Neither have we any Reason to suppose an Alkaline Acrimony ever present except in stagnating Fluids. I shall therefore pass over every thing ye relates to particular Acrimonies, & proceed to speak of ye 2nd thing proposed viz: of evacuating Humors from the Body.

2°: Evacuare
A Humorem Unicum nempe.

Evacuations may be brót on

1: By a greater Quantity of Fluids being determined to a particular Organ.
2nd: By the Fluids being more or less prepared to pass off by a particular Function.
3rd: By exciting the Action of ye Secretory or Excretory Vessels.

1st: The Determination of a greater Quantity of Fluids may be brót on by
1st: encreasing the Impetus of ye Blood
& 2nd: by encreasing its Quantity. Secretions are seldom encreased by ye first.

I know of none but Perspiration wch are encreased by ye velocity of ye Blood being encreased. the second takes place wth Regard to every Secretion in the System. they are always encreased in proportion to ye Quantity of Fluids brought to them wch is always necessary in order to bring ~~about~~ about ye encreased Secretion we wish for.

2nd Secretions are encreased by ye Fluids being better prepared to pass off by the Secretory Organs. It is hard to speak confidently here. we know too little of Secretions to be able to induce Changes in their Natures. Water encreases ye Secretion of Urine & Perspiration

by altering their qualities, but w^h: are ye substances w^ch: induce a change on y^e: nature of the Saliva - Mucus & Bile? ——

3^d: By exciting the action of particular secretions. this is to be done

1st: By inducing such a condition of the system w^ch: excites the action of secretory organs.

2nd: By exciting the action of muscular parts w^ch: press on secretory organs

3rd: by stimulating substances applied to the secretory organs themselves.

1st: this takes place in ye secretion of milk w^ch: is brought on in an increased quantity

by a particular state of ye Uterus.
Bile too is encreased by Anger &
Urine by Other Passions of ye Mind.
. This Manner of exciting ye Secretions is seldom in our power, nor can it be reduced to certain Rules.
2nd: Muscular Fibres Altho they lie contiguous to Glands are ~~to~~ not so easily excited as we could wish. ye Quantity of Saliva is indeed encreased by Mandication. perhaps the Operation of Purges depends too only by their encreasing the Peristaltic Motion of ye Guts wh: ~~cause~~ cause them to pour out

a greater Quantity of the Liquor secreted by the Glands of the Intestines.

3rd The most powerful Method of exciting the Functions is by applying stimulating Substances to the Secretory Organs. & of this we shall speak chiefly. But this does not imply that there are such things as specific Stimuli. Altho' there may appear to be some Foundation for their Operation. For 1st Anatomy has not pointed out any different Conditions of particular Nerves wch we suppose to be specifically affected. 2nd most Acrid Substances affect all the Glands alike.

Purging vomiting & ~~the~~ a Diuresis are excited by different Medicines only in Consequence of their being applied more or less primarily or in greater or less quantities.

I shall begin ~~the~~ w: speaking of the secretions of Mucus. this you know abounds all over the System but more especially in the Mouth & Fauces & Bronchia. Errhines therefore are indicated in all Cases of Obstructed Mucus the worst Inflammation as well as in all Congestion in ~~of~~ the neighboring parts such as in the Head Ach. Tooth Ach &c — Ophthalmia — Gutta Serena, Deafness

& wm in Comatose & paralytic Dis-
orders. the means of exciting Sneezing
are 1st warm Fomentation or the
Steams of warm water especially in
the various Cases of Angina. 2nd by
all the variety of acrid Substances which
encrease functions especially those
which are most hauritory & are
least liable to bring on Inflamn.
in Obstinate Head-Ache. Amaurosis
& the more violent Urhines may be
used, for by encreasing the Quantity
of the Discharge, we obviate any bad
Effects of their stimulus.

we know of no specific Expecto:
:rants. those medicines wh. prove
Expectorants are of such a nature as
to stimulate the Stomach Guts &
Kidneys, & upon this acct: we are
often disappointed of our Intentions in giving
them. the Discharge of ye medicines
by vomiting or stool may be obvia:
:ted by giving them in proper Doses &
at proper Intervals. Tobacco when
dried & boiled loses its vomiting & by
longer drying its purgative qualities &
at last becomes Diuretic & Expecto:
:rant.

Sialogoga.

This Secretion viz:- of Saliva may be excited by an internal as well as external medicines. Mercury is the only medicine that answers this purpose. I shall therefore briefly enquire into its Modus Operandi.

It is supposed by some ye: Mercury acted upon ye Body chiefly from its weight. But this is a wrong supposition & affects the most general proposition in Philosophy wch is that ye: Quality of Bodies are never changed by mechanical means, & therefore do not act mechanically upon Animals.

- If Mercury acted from its weight

its Effects would always bear some Relation to its Fire, but this is not the Case, for we find it proves more deob=struent the fixer it is made, nor do we even find it in the Blood formally present. Its Combination w:th Salts greatly alters its Operation. the more Acid we add to it, the more we dimi=nish its Gravity, but w:th this, we en=crease its Virulence in acting upon y:e Body, neither do y:e Saline Preparations of ☿ attenuate the Blood, but on the contrary rather coagulate it, w:ch shows that y:e Salt rather thwarts y:e ☿ acts upon it. Besides the Blood is never dissolved by ☿. It is never

introduced in sufficient Quantity for this purpose. I have often seen Blood drawn from Persons under a Salivation w: its ordinary healthy Appearance & sometimes w: an Inflam: Crust.

2: What determines Mercury to act upon y: Salivary Glands? It does not act specifically upon them! from the ~~the~~ Arguments we formerly used ag: Specific Stimuli. 2: from its acting upon all the Secretions as well as the Salivary such as y Gutts, Kidneys, Skin. nay we often find it acting upon these when the Glands secreting

saliva are not in the least affected.
- Mercury appears to be disposed
to associate w^th: the Matter of y^e saliva.
- Can thaides we see are disposed
to unite w^th: y^e Matter of the urine in
the same Manner. the saliva ab=
-sounds w^th: an Ammoniacal salt.
& hence we observe the salivary
glands chiefly affected in y^e Lenvy.
may not y^e ℣ have a Relation
to this ammoniacal salt of the
saliva & may not this be the
Reason why the salivary glands
are affected in a manner analagous
to the Lenation in a salivation?

the Ammoniacal Salt we see when added to water makes it dissolve a double Quantity of ℞ Sublimate w: shows the Relation they have to one Another.

Turpeth Mineral acts as a Sialagogue merely by stimulat: the salivary Glands in its passage into ye Stomach. In w: Cases is Salivation indicated? In all Cases where we would wish to induce an entire Change in the Fluids, or to evacuate Acrimony from the Serum of the Blood in w: it has its Seat. I do not imagine that it acts as an Antidote upon any Acrimony especially the venereal

ceremony. for 1st we have no Analogy of it, nor Reason to believe it by Reasonings a priori. 2nd we never find it cures the venr Disease the worst exciting a plentiful Evacuation. 3rd the more Stimulating we render it, the more successfully we use it. hence the superior usefulness of Solution of Corrosive Sublimate.

4th Many Substances wch we know act only as Evacuants cure the venr Disease such as ye Guajacum & many American Plants lately found out by the Indians.

Supposing then Evacuations

the only way of the ☿ Operating
when is Salivation to be ordered?
I do not think it absolutely necessary
at any time. It exposes the Patient
to many ~~Co~~ Inconveniences. I have
seen it performed in an equally short
time by Other Evacuations. However
when Salivation can be used ~~safe~~
safely, I see no Disadvantage in it. It
may always be at ye Option of the
Physician.

Wh: Preparations of ☿ are best?
The mild Ones. hence a Late
Author has proposed applying it only
in the Form of Unction. From Experience
I can recommend ye method. —

Diuretica

In wh Cases are diuretics indicated.

1st When the Blood abounds wth saline Matter as in the Leucy: wh depends upon ye Presence of ye Salts in ye Blood wh usually passes off by the Kidneys. Vegetables are ye best Diuretics for this purpose.

2nd When Water predominates in the System. I have often said the Blood could not contain an extraordinary Quantity of water, but they are still useful when water is stagnating or has been congested as in the Dropsy in which a

scanty Secretion of Urine takes place, & wch perhaps originally occasioned the Disease. But how do Diuretics operate in Dropsies? — there is a Correspondence between Secretion & Absorption, & by producing a watery Secretion we excite the Action of Absorption. in wh manner no One has yet said. but we are sure of the Fact. I have seen a Vomiting when continued for 24 hours cure an Anasarca.

3rd Diuretics are indicated when the Urine is suppressed or when the

urinary passages are obstructed, unless the obstruction is of long continuance or very much fixed. these are the chief cases in wch Diuretics are indicated. Dr Boerhaave says they are useful after Concoction is finished in acute Diseases, but this is a Doctrine I know nothing about.

a Diuresis is brought on 1st By filling the body wth watery Fluids.

2nd By diminishing Perspiration wch we know carries off a great many fluid parts of the blood.

3rd By inducing a sudden Constriction of the urinary Excretories. Cold

contracts the Urinary Organs wch excites them in such a manner as to bring on an increased function of Urine. The best way of applying Cold is to ye Extremities especially ye Feet.

2dly: By the Medicines wch are called Diuretic. These are Saline Matters wch by uniting wth ye Serosity of our Blood is more immediately disposed to pass off thro the Kidneys. The Acids are the least powerful Diuretics the Muriatic wch is the most volatile of any of ye Fossile Acids is the most diuretic of any except the Vegetable. Alkaline Salts and more

diuretic than the Acids especially the fixed Alkalies. Neutral Salts act as Diuretics & are not liable to be changed in the Stomach. they may be given in larger Quantities than any of the Other Salts. I believe no substance acts as a Diuretic but such as contain more or less of saline matter. all from Vegetables which act as Diuretics are of an acid volatile nature.

I know of no Indication that it is more difficult to answer than the One we have been speaking off, as all Diuretics have likewise the power

of stimulating the Stomach & Intestines.
we must therefore to render them
Diuretic either diminish their bole:
Petty or give them in small Doses.
They are apt to be so diffused that it
is necessary to give them pretty strong.
I have the use of Colchicum. Does
Combining Diuretics with Sedatives
Medicines make them answer the
better? — I cannot say it does
from my own Experience: —

In w^h Cases are Diaphoretics indica-
ted. 1st: when Perspiration is Obstru
but it is hard to tell when this
takes place, or w^h: Diseases it induces.
they are generally given in Catarrhs
Colds &c. But we have no proofs of
these depending on any acrid matter
being retained in the Body. I believe
they do Service chiefly by bringing on a
proper Determination to ye Skin.
2nd When an Acrimony prevails in
the System. Acrimonies are mostly
discharged by the Skin. this ye Exan-
themata sufficiently prove. I believe

the venereal Disease might be cured by plentiful Sweating. Diaphoretics are useful in all those Cases ~~of~~ of Lues Venerea where we see ye acrimonious matter disposed to pass by ye Skin.

3rd: When water Abounds in ye System.

But they are not so safe as the Diuretics in these Cases altho' they operate in ye same way.

4th: When ye Ballance of ye System has been changed or when ye Determination to the Skin has been Obstructed. This is the Case in all Fevers, & hence ye use of Diaphoretics in febrile Diseases.

But Diaphoretics should be used w:
great Caution here. the Skin often re-
mains long dry after ye Exhibition of them,
& the Fever after the most profuse
Sweating.

5th: When the Action of the System is
torpid. this happens in some Fevers
& in many comatose & paralytic
Diseases where we are sure there is
no Congestion in the Brain.

The Diaphoretic Medicines are
1st: water taken in large Quantities
2nd Perspiration & Sweat: may be excited
by all the various Means of exciting
the Sanguiferous System such as Exercise

internal stimuli wch act only upon y^e
Stomach & not directly on ye Heart &
Arteries.

3rd By exciting a Determination to y^e
Skin. Heat joined wth Moisture ass.
wer this Indication best. Cold likewise
answers this Intention as also Frictions.

4 By various Matters acting on the
Body so as to relax the Surface of
the Skin. Opium & all sedative
Medicines act in this way. those
Substances likewise wch act on ye Stomach
prove diaphoretic such as cold Water
Neutral Salts wch are sedative & Refrige-
rant. Mettis act in ye same way.

II In Morbis Fluidorum Indicationes Curatoriæ sunt

2do A. Sanguinem ~~per~~ evacuare per Emenagoga.

The Uterus is evolved about Puberty. the manner of it you will easily understand from w: was said under the Head of Nutrition concerning the Doctrine of Evolution in general. the Depletion of the uterine vessels leaves them relaxed & w: ~~p~~ disposes them to pour forth blood again after a certain time has been allowed for its accumulation. this obliges us to embrace the Doctrine of a partial Plethora

which indeed infers likewise the Presence of a general Plethora which goes no further than to give an exact Fulness & proper Degree of Tension to the Whole System. Why does not Abstraction check the Flow of the Menses?

Because their Flow does not depend Upon an Absolute Quantity of Blood in the System, but upon a Relative Quantity, & therefore where Blood is drawn, the Ballance ~~of the Syst~~ between the Uterus & the rest of the System is still kept up.

But again wherever Blood is evacuated, there we see a Plethora

most apt to happen. Thus those
who are subject to a Bleeding of the
Nose are troubled wth Congestions of
Blood in their Heads. in ye same
manner the Uterus from having
long discharged Blood gets a Habit
of accumulating it wch no Abstraction
can destroy. But Further the
Discharge of the Menses is an Ac-
tive not a passive Evacuation. —
When ye Uterine Vessels are filled
wth Blood their Action is excited by
ye stimulus of the Blood wch excites them
to discharge it. this you see connects it
wth ye Nervous System, & Acc^ts in some
measure for its being periodical. —

Emenagogues are indicated when this Flux is preternaturally stopt, & in such Cases only. Pathologists divide Obstructions of ye Menses into 1st Emanico Menstruum ie when the Menses have never yet flowed. 2d Obstructed Menses ie when they have been suppressed. Many Causes concur in bringing on both these Cases of suppression. — they may all be reduced to 1st want of Impulse in the Blood in ye Uterine vessels. 2d a Torpor in the Uterine vessels which renders them insensible to the

Stimulus of the Blood, or 3rd: to an increased Resistance in ye Uterus. 1 or The want of Impulse in ye Blood may depend upon a want of Aliment or weak assimilating powers, or plentiful Evacuations. I believe these Causes Operate but rarely. The Chlorosis may depend upon this Cause or rather upon the 2nd: viz: a Torpor of the Uterine Vessels. The 3rd: viz: Resistance in the Uterus may be congenial, or arise from Obstruction by ch: I mean a difficult Transmission of Blood from a Fault in the Blood itself, or from a

Constriction w^ch: is seated in ye simple or moving Fibres. I believe the Menses are never obstructed from a Fault in the Blood, but by Constriction always when they are checked from incidental Causes.

The Means of promoting the Menses are 1: By restoring the Quantity of Blood by Aliment or strengthening the Spinal: powers. 2nd: By encreasing the power of ye System in general by the Quality & Quantity of particular Foods —

Exercise & Cold Bathing. the application of Heat especially in the winter season has been known to bring down the Menses. the power of Electricity has done great service in Obstructions of the Menses. its stimulus is confined chiefly to the nervous system, & seldom acts upon ye Sanguiferous System. tonic Medicines such as Chalybiates Barbe are of great service in these Cases. ye more purely stimulating Medicines do service likewise. Mercury in particular has often been employed wth Advantage in restoring the

Menstrual Flux. I have sometimes seen Vomiting restore the Menses. how does it act? Either by stimulating the whole System or by relaxing the Uterine Vessels from stimulating the Stomach.

3d. The Menses are restored by determining the Blood to y Uterus: Blood-Letting has long been used for this purpose from y Notion of Revulsion. but of this we shall speak directly. Compressing the Illiacs has been employed to determine the Blood into y Uterine Vessels, but I cannot say I have

Often seen it used w.th Success in some Cases of Obstinate Menses from Obstinate Causes it may do Mischief by throwing the Blood into the Aorta &c. Purges are useful to answer this Indication. the Lower Extremities sh.d be excited by means of Friction w.ch brings on a Determination of Blood towards the Uterus. Bathing the Lower Extremities has been much recommended, & I believe it is a most useful Remedy to derive to y.e Uterus. It rarefies the Fluids & thus disposes to Hæmorrhage &c. 1.st By exciting the Action of y.e

Uterine vessels. the most powerful
method of doing this is 1 by the
use of venery. I refer you to the
Devines to determine when this Re=
medy must be recommended. 2nd By
applying stimulat: substances to the
vagina. they never enter the Cavity
of the Uterus. I have no great De=
pendance upon them. they cannot act
by their Heat, for nothing warmer than
the uterus itself can be introduced into it
so as to relax it.
3d Specific stimuli have been propo=
sed to the Uterus. the fœtid Gums
& Plants have been subjected to

act in this way, but I would choose to refer their Operation to their Antispasmodic virtues. Aloes proves Emenagogue either by dispersing the Blood to Hæmorrhage wch. I much doubt except it is from ye. Hæmorrhoidal Vessels, & this it is done from its passing unchanged thro ye small Guts, or it may prove Emenagogue from stimulating the Rectum wch. we know is connected wth. the Uterus, or lastly it may act merely as a Purge.

4th. Warm Bathing is calculated

to answer this Indication when used in the Form of ye Lenimentum. it acts by taking off ye Resistance in the Uterus. its Virtues then are chiefly Antispasmodic.

Much Study & Attention has been bestowed upon this Evacuation at all times by Physicians. many Disputes have been agitated concerning it. wch indeed is a Reproach to our Dogmatic Plan of Physic. But this depends upon our appealing so much to Experience wch is liable to such great Fallacy, so that this throws the Reproach upon Empiricism. I shall avoid entering into the Disputes concerning Blood-Letting, & deliver you in a few words my Sentiments upon it. 1st then Blood.

Letting acts merely as an Evacuant & therefore its Effects will be Relative to the Quantity of the Blood in the Body. Authors differ about the Quantity of the Fluids in the Body upon ye wch of some of them taking into their Computations the fluids wch ye Solids yield by Chemical Analysis. I shall confine myself only to the circulating Fluids, or those only wch convey red Blood. wing thing drawn by Blood-letting comes only from ye red bepels & its Effects will be confined to them, or to that Blood only wch circulates in the larger bepels, for ye Blood

circulating in the Serous Vessels is beyond the Reach of ye Discharge ye Blood-letting occasions. I believe therefore that the Quantity of Blood may be placed below 25 in a Man of 120 weight. But again the Effects of Blood-Letting will be verified by the Quantity of red Globules drawn off. You see then that Blood-letting will occasion a considerable Depletion in the Arterial System. Some tell us that this Depletion is very transitory from Secretion being decreased, & from liquid Aliment being thrown in to the Body, but then

of these contribute to ye immediate Regeneration of Blood. the last passes off immediately by urine or Perspiration. the Coagulable Lymph & Red Globules require a solid Aliment to reproduce them, & this we know is seldom given in those Cases, in wch Blood-Letting is indicated or ordered. all this yet tends to show that ye Quantity of Blood drawn is much greater wch Regard to the Rest of the System than has been supposed.

The Effects then of Blood Letting are 1: on a Diminution of the Tension of ye Blood-vessels wch I told you before

depends upon a certain Degree of Fullness of these Vessels. The Tension of the Muscular Fibres & ye Excitement of the Sensorium you will naturally see is closely connected wth ye Fulness of the Blood-Vessels, as their Action depend upon a due Influx of Blood into them. a Debility then & some Degree of Atonia must always succeed a Loss of Blood. If the tonic power is too much increased from any Cause Blood Letting will remove it, hence its great Use in Cases of Inflamm^n & Diathesis.

The Vessels are always in a stretched state, & this will acc^t for Dr Haller's Experiment in w^h he found upon puncturing an Artery in a living Animal that the Blood had a retrogade motion in both Arteries & veins towards the Open Orifice. It depends upon the stretching powers being taken off, & the Vessels reacting on the Blood, — w^h causes it to tend towards that Part where the Tension is removed i e the Orifice.

This Doctrine overthrows the Notion of Revulsion as the Ballance as of the Systems will be restored immediately

after bleeding. the Doctrine of Revulsion first took its Rise from Physicians supposing the Arteries were rigid Canals, but later Experiments have taught us ye contrary. I conclude then y^t Blood-Letting acts only by Depletion. But this Depletion will always be more immediate & more conspicuous in particular parts than over the whole System & hence the use & Foundation of topical bleeding. thus in an Opthalmia taken from near ye Eye half the Quantity of Blood will do more service than three times ye Quantity taken from the Arm, unless it

depends upon a general Inflam.
Diathesis of the whole System, or has
induced such an Inflamm.y Diathesis.
2.nd Other Circumstances attend Blood-
Letting besides Depletion. In Cases of
very great pain we often see Zi of
Blood afford immediate Relief. This
depends upon y.e Tension of the System being
very exquisite, & uniformly connected
thro' all its parts, ~~&c~~ w.ch makes it
sensible to the least Relative as
well as Absolute Depletion. This Relief
will be greater according to y.e Fulness of
the Stream ~~of~~ in w.ch it flows.

3d: Blood Letting will have Effects according to the number of Mus:=cles in Action wch: tend to keep up the Irritibility of the System. hence y Foundation of Bleeding in a recum:=bent Posture. The nearer we are to lying on our Backs. the less Mus:=cles act - & the slower the Pulse. The Symptoms wch follow Bleeding depend upon a Relaxation induced in the Arteries wch: is communicated to the whole System. I have seen a hail young Fellow fall into a Lynope upon having a tinge Imposthume About the size of a Pistle of the small pox opened in his Forehead.

you will be easily led to apply
what has been said to arterial & topical
bleeding.

Blisters

Blisters have been supposed to have a very extensive Operation from a notion wch: has prevailed of Canthaides entering the Blood & defiling it. But I deny their having any Effects upon the Blood. for 1st: they are never used in suffic.t: Quantities for this purpose. 2nd: They act not only by Evacu:ating but they likewise excite Inflamm:n wch: the Foundation of their Blistering. so that Blisters are both Evacuants & Stimulants. the Effects of Blisters will vary according to the Difference of the Constitution they are employed in.

when there is little Irritability they excite no Inflamm:n nor even quicken the Pulse. In Constitutions of a contrary Temperament they prove Stimulat:s & quicken the pulse. 3:d They relieve an Inflamm:n in a particular part by bringing on an Effusion of Serum towards which the Inflamm:n itself did not Naturally tend. this shows you their usefulness in Rheumatism. By this topical Evacuation it often takes off a morbid Tension from the whole System, but their Effects are always the more considerable the nearer they are applied to a

particular part. But still I think the Tension of the Whole Surface of the Skin may be greatly influenc'd by the Application of Blisters to ~~the whole~~ any Part of the Body.

This is an Evacuation of Matter in the Form of Pus & from late Discoveries it appears to be produced from Serum, very strongly impregnated w: the Coagulable Lymph. The Discharge then from Issues may be considered as nearly pure Coagulable Lymph, & comes directly from the Sanguiferous System. Its Effects therefore are more considerable w: the Regard to the System than we would suppose from the Quantity Discharged; they draw off the Lymph faster than it is supplied by Aliment. —

But again Issues allways keep up a topical Inflamm.n: for there can be no Suppuration without some Inflamm.n: — By this Operation they Obviate incipient Inflamm.n: & hence their useful in the Phthisis Pulmonalis. If the Body is Affected with an Inflamm.y Diathesis while an Issue runs the Inflammy Determin.n is towards the Issue, & thus Often prevents internal Inflammations. —

This is a very large & intricate subject.
I shall first consider ~~its~~ their general Effects,
which will inform you to apply ~~it~~ them in
particular Diseases

1: They evacuate the Contents of ye Stomach.
They often operate in this Manner,
when extraneous matters are introduced
there, or morbific matter formed there
by Error in Digestion or Other Causes.
Too much stress has been laid upon
the Evacuating Effects of Vomits from a
want of knowledge the process of Digestion
& the Nature of the Fluids in ye Stomach.

Vomits

2nd: vomiting derives many Fluids into the stomach wch: were not there till the Vomit was given, & even goes so far as to invert the peristaltic motion of the Guts insomuch yt: ye pancreatic Juice & Bile are often thrown up by vomiting. this leads us to view vomiting in a more extensive manner yt: we have hitherto done. I once knew a Practitioner of Physic who used no other method of curing Dropsy but by ye frequent Exhibition of vomits.

3rd: vomiting in Consequence of bringing the Fluids of the Guts into the stomach generally acts as a Purge — perhaps the escape

of some part of ye vomit over the Pylorus may contribute to bring on the Purging.

4th. In vomiting the Contraction of the Diaphragm & Abdominal Muscles compresses the abdominal viscera by wh: means the Course of the Blood is variously interrupted & relaxed. they act likewise as a Stimulus to all ye viscera & operate on ye Liver. Kidneys. Urine &c. the Liver in particular is very liable to a torpid Circulation & a stagnation of Blood. no Medicines are capable of reaching it. Vomitings there acts immediately upon it. & therefore shd be used very freely in Diseases of the Liver. great Caution

sh.d be used in Diseases of the Kidneys especially
in Cases of Stone when they are very large.
In Obstructions of the Menses the Compression
excited by vomiting excites the vessels of the
Uterus & thus often brings on a Flux of
the Menses. In Uterine Hemorrhages
they have likewise been employed to good
- here I shall not say in what manner.
5.th They operate on the Thorax & promote
a freer Circulation of the Blood thro' the
Lungs. they cause the mucous Glands
to emulge plentifully & thus prove very
most useful Expectorants.
6.th They relieve Congestions ~~of the Head~~ in the
Head in particular Cases. But here
they sh.d be used only at a certain period

of Life & under very particular Restrictions.

7.th They quicken the Circulation all over the System & thus prove very powerful Sudorifics in Fevers & Other Diseases when Sweating is necessary.

8.th Vomiting is always attended w.th that Anxiety we call Sickness w.ch has very different Effects upon the System from any thing we have said. these Effects depend upon the wonderful Connexion w.ch is established between the Stomach & the Rest of the System. —

Vobis

Cullen's
Institutes
Vol III